

**Problem Structuring Methods for Collaboration:  
A conceptual development, with an application to  
a construction partnership in the UK**

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## **Abstract**

Problem structuring methods (PSMs) have been developed within operational research (OR) to assist a set of actors to agree on a problem structure and make commitments to consequential action. Their characteristic feature is the use of a model to represent alternative versions of the problem of common interest, combined with facilitation to help actors make constructive mutual adjustments. Whilst most PSMs have traditionally been applied with actors confronting problems within organizations, others have also been applied with actors working between and across organisations to address a problem of common interest. This research will explore the significance of PSMs in collaborative contexts of this kind.

The aim of this research is to investigate the possible roles of PSMs in assisting actors of an inter-organisational domain who engage in collaboration to address a problematique of common interest in order to reach joint agreements with respect to it. The hypothesis investigated in this research is that the analytical assistance provided by PSMs can be expected to contribute to a collaboration process principally through improving actors' sense-making of their problematique, and through providing structure to the product of this sense-making activity. The interpretation of our hypothesis is that PSMs generate this effect through improving the quality of dialogue between actors. This effect should tend to impact positively on the ownership of the commitments resulting from the dialogue, and on mutual accommodations in the power balance among actors.

In order to articulate this hypothesis, it has been necessary to conduct some conceptual clarification to achieve a clear meaning for the terms 'shared meaning', 'power', and 'dialogue'. Building upon this conceptual clarification, a model of collaboration as a process has been developed, which identifies the factors, pre-requisites and processes involved in actors' ability to achieve the



intended products of collaboration. This model provides the basis for identifying the possible effects of PSMs, and for evaluating their effectiveness.

To explore our hypothesis and the adequacy of the conceptual model, a case study drawn from an action research project in the UK construction industry was carried out. This action research project was industry-academic collaboration aimed at contributing to build a high value construction environment, and its principal output was the development of a PSM-based methodology for construction project reviews. The case study reported in this thesis involved the application of this methodology in a multi-organizational construction partnership in the hotel business. This involved engagement in and observation of ongoing partnership activity of three construction project teams.

Reasonably clear and positive effects from the application of the methodology were found in the dialogue between participants, consistent with the hypothesis. Additional positive effects in terms of achieving inter-organisational learning within the selected partnership were also identified. Overall the results of the case study are encouraging; however, as they result from the application of a particular PSM-based methodology, extrapolation to more general conclusions about the potential of PSMs for multi-organisational collaboration should be made with caution. Nevertheless, the results of this research suggest valuable potential avenues for further research.

The case experience also was generally supportive of the conceptual model of the collaboration process, in that the activities and processes observed could be interpreted without difficulties within the model's framework. The model offers a means for further theoretical and empirical work aimed at confirming and enriching its structure and validity.

**Keywords:** problem structuring methods, collaboration, inter-organisational domains, dialogue, shared meaning, power, multi-organisational teams, construction industry, methodology, evaluation.

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***To Mami (Clelia) and Papi (Lucho)***  
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## **List of Abbreviations**

<b>AR</b>	Action Research
<b>COLA</b>	Cross-Organisational Learning Approach
<b>CVA</b>	Competing Values Approach
<b>DA</b>	Decision Analysis
<b>EPSRC</b>	Engineering and Physical Sciences Research Council
<b>GDSSs</b>	Group Decision Support Systems
<b>IORs</b>	Inter-organisational Relations
<b>OMT</b>	Oval Mapping Technique
<b>OR</b>	Operational Research
<b>PSMs</b>	Problem Structuring Methods
<b>SCA</b>	Strategic Choice Approach
<b>SD</b>	System Dynamics
<b>SODA</b>	Strategic Options Development and Analysis
<b>SOSM</b>	System of Systems Methodologies
<b>SSM</b>	Soft Systems Methodology
<b>WHC</b>	Whitbread Hotel Company

## Glossary

*Action-oriented dialogue* – a type of dialogue in which participants collectively seek to reach agreement on how to carry out an action which is of concern to them. Action-oriented dialogue may (or may not) have well-organized rules of conduct, and involve persuasion and negotiation as part of the process.

*Actor* – an individual, group or organisation seeking to influence the inter-organisational domain which it is are part of.

*Collaboration* – a process by which actors of an inter-organisational domain work together to gain a broader appreciation of a domain-level problem which affects them, and to reach joint agreements with respect to it and the future direction of the domain.

*Dialogue* – a process of communication among two or more individuals through a series of back and forth messages or ‘speech acts’, in which these messages are organised in a sequence towards fulfilling a goal.

*Domain-level problem* – an ill-structured problem area or ‘problematique’ which needs to be resolved within an inter-organisational domain, and which gives it its identity. Domain-level problems are characterised by high levels of complexity, uncertainty, and conflict.

*Instrumental power* – the ability to secure preferred outcomes in the face of conflict. Instrumental power may be consciously mobilised in the decision-making arena to produce favourable decisions or to keep issues out of the decision-making arena

*Inter-organisational domain* – a social system which comprises a set of actors with a common interest in a problem area which cannot be resolved unilaterally by any single actor.

*Meaning* – the product which results from a conscious individual directing attention towards objects in his or her own world. Meaning is created through personal experiences and social processes.

*Negotiation dialogue* – a type of dialogue oriented towards the resolution of a conflict of interests between participants, in which each party makes offers of concessions to the other until a satisfactory agreement which partly meets their goals is reached.

*Persuasion dialogue* – a type of dialogue oriented towards the resolution of a conflict of opinions between participants, in which each party tries to demonstrate that a proposition or point of view is true or right, and based on evidence. A persuaded party will change his or her initial positions and commit to that of the persuader party.

*Power* – the ability to affect the behaviour of others in a conscious and deliberate way.

*Problem structuring methods* – a family of participatory and interactive methods developed within the discipline of operational research, whose purpose is to assist groups of diverse composition gain a better understanding of a problematic situation of common interest, and which is characterised by high levels of complexity, uncertainty and conflict. This is achieved through the explorations of different perceptions, and facilitating negotiation, with a view to generating consensus on problem structure, and usually, on initial commitments to consequential action

*Shared meaning* – the emergent product of regular social interaction, whereby members of a group begin to favour one interpretation over another. In this way, group members generate coincident expectations about patterns of reciprocal behaviour. Shared meaning is facilitated by the degree to which individuals

exhibit agreement on both the interpretive schemas and the value systems they use for meaning creation.

*Social construction* – the process by which individuals collectively construe and reproduce their social world by acting on their interpretations and knowledge of it.

*Symbolic power* – the ability to legitimise ideas, procedures, actions and outcomes without conflict. Symbolic power may be consciously mobilised through the ‘management of meaning’.

# 1 Introduction

The environmental contexts in which organisations operate are becoming increasingly complex and turbulent. Complexity principally stems from the nature of the problems organisations face: the issues that constitute these problems are extensive and interconnected, and usually associated with high levels of uncertainty. Turbulence, on the other hand, arises when the organisations that share it become increasingly interdependent. This interdependency is also associated with high levels of uncertainty, as organizations, acting independently and in diverse directions, create unanticipated consequences for themselves and others (Emery & Trist, 1972). The complexity and turbulence of the environment thus makes it difficult for organizations to act unilaterally to solve the problems they face.

Several forms of inter-organizational relations (IORs) have emerged in recent decades as a response by organizations to the complexity and turbulence of their environments. Typically, the particular form an IOR adopts will depend on whether organisations wish to jointly develop a shared vision, resolve a conflict or gain ‘collaborative advantage’ (Gray, 1989; Huxham, 1996). IORs can range from strategic alliances and joint ventures between business organizations (e.g. Das, Sen, & Sengupta, 1998; Dickson & Weaver, 1997; Doz & Hamel, 1998; e.g. Harrigan, 1988; Saxton, 1997) to less institutionalised collaborations among a wide variety of stakeholders concerned about issues of common interest (e.g. Carpenter & Kennedy, 1988; Gray, 1989; Huxham, 1996; Westley & Vredenburg, 1991; Wood & Gray, 1991). Whatever the specific form of IOR adopted, its general purpose is to enable organisations to manage their future collectively.

Different theoretical perspectives have been used to conceptualise inter-organisational relations including transaction cost economics, exchange theory, organizational learning and institutional theory (for recent reviews, see Barringer & Harrison, 2000; Gray, 2000; Osborne & Hagedoorn, 1997). In this thesis, we will draw principally on the body of literature on inter-organisational domains. A

*domain* is a social system which comprises a set of actors<sup>1</sup> with a common interest in a problem area which cannot be resolved unilaterally by any single actor (Gray, 1989; McCann, 1983; Milward, 1982; Trist, 1983).

An inter-organisational domain is not an objectively given entity but one that is socially constructed<sup>2</sup> (Berger & Luckmann, 1966) by the actors who constitute the domain. Initially, the boundaries and identity of the domain are usually unclear, shifting or in dispute (Gray & Hay, 1986). A key activity of this process of socially constructing the domain is 'joint appreciation' (Trist, 1983; Vickers, 1965), which involves actors making judgements of fact and value about the domain. These include judgements about what the domain is, and what it will or might be on various hypotheses. Through joint appreciation, the problems and actors that constitute the domain are clarified and stakeholders identified, and an identity and mutually agreed upon boundaries for the domain are created. New appreciations are made as new problems arise within the domain, which may lead to new boundaries and a new set of stakeholders (Gray, 1989; Trist, 1983).

Once the identity and boundaries for the domain are created, stakeholders can be expected to reach agreements to regulate their future activities. These may take the form of policy recommendations to the stakeholders' constituencies, or ad-hoc arrangements that need not involve formalized agreements concerning stakeholders' future interactions for which enforced provisions are specified. It is possible, however, for stakeholders to create formal, long-term structural arrangements as mechanisms to support and sustain those activities which contribute to their 'joint appreciation' (Gray, 1989; McCann, 1983; Trist, 1983). These formal arrangements may include rules governing future interactions among stakeholders and the design of stakeholders' roles and responsibilities.

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<sup>1</sup> It is simplest to think of actors as individuals but of course they can be aggregates (e.g. groups, organizations). Any reference made to actors throughout this thesis is applicable to any of these categories, unless otherwise stated.

<sup>2</sup> Social construction refers to the process by which individuals collectively construe and reproduce their social world by acting on their interpretations and knowledge of it.

An inter-organisational domain thus can evolve from being an 'under-organised system' where actors act independently, if at all, with respect to the problems that constitute the domain (Brown, 1980), to what can be considered a temporary 'negotiated order' (Altheide, 1988; Gray, 1989; Heimer, 1985; Nathan & Mitroff, 1991; O'Toole & O'Toole, 1981; Westley & Vredenburg, 1991). Negotiated order refers to an organisational context in actors continually negotiate their social and working relationships in order to maintain order (Day & Day, 1977; Strauss, 1978; Strauss et al., 1963). Applied to the inter-organisational domain, a negotiated order implies a set of actors collectively negotiating and renegotiating agreements to govern their interactions with respect to the domain.

The development of a domain as a temporary negotiated order depends upon actors collaborating to gain a broader appreciation of the problems they face and to make progress which could have not been possible by any actor working alone (Gray, 1989; Trist, 1983). Following Gray (1989), we define *collaboration* in this thesis as:

*a process by which actors of an inter-organisational domain work together to gain a broader appreciation of the domain-level problem and reach joint agreements with respect to it and the future direction of the domain. A domain-level problem is that problem area which needs to be resolved within the domain, and which gives the domain its identity.*

Domain-level problems usually defy a clear definition, which implies that it is not possible to speak of 'the problem'. Rather, it is more appropriate to speak of domain actors confronted by a 'problematic situation' or 'problematique' (Quade, 1980) consisting of clusters of interconnected problems, and which no single actor can solve unilaterally (Gray, 1989; McCann, 1983; Milward, 1982; Trist, 1983). Gray (1989, p. 10) characterises such domain-level problems as follows:

- the problems are ill-defined, or there is disagreement about how they should be defined;



- the problems are often characterised by complexity and uncertainty;
- existing processes for addressing the problems have proved insufficient and may even exacerbate them;
- several stakeholders have a vested interest in the problems and are interdependent;
- these stakeholders are not necessarily identified a priori or organised in any systematic way;
- incremental or unilateral efforts to deal with the problems typically produce less than satisfactory results;
- differing perspectives on the problems often lead to adversarial relationships and conflict among the stakeholders;
- stakeholders may have different levels of expertise and different access to information about their problematic situations; and,
- there may be a disparity of power resources for dealing with the problems among the stakeholders.

Problems with these characteristics have been termed ‘messes’ (Ackoff, 1974, 1981), ‘swampy’ (Schon, 1987), and ‘wicked’ (Rittel & Webber, 1973), and have received particular attention by scholars within the operational research (OR) and systems fields (to be discussed in Chapter 4).

If actors perceive that they can address the domain-level problem without involving others, they will not participate in a process of collaboration. This occurs when actors have either a range of alternatives to tackle the domain-level problem unilaterally or recourse to ‘free-riding’ tactics to benefit without contributing to the alleviation of the domain-level problem (Hardin, 1982; Olson, 1971).

Two simultaneous conditions seem to be essential for collaboration to be initiated. First, actors must have a high stake in the outcome of the collaboration. The stakes of actors are related to the fundamental interests of the firm such as efficiency, environmental stability and legitimacy (Logsdon, 1991; Oliver, 1990).

Second, it is also necessary that actors perceive a high degree of interdependency with other actors of the domain for dealing with the domain-level problem (Gray, 1989; Logsdon, 1991; Oliver, 1990). Interdependency is associated with the notions of reciprocity and asymmetry (Oliver, 1990). Reciprocity is based on the social norm that one has an obligation to contribute in order to receive benefits. Reciprocity occurs when actors recognise that mutually beneficial results can be achieved through collaboration. By contrast, asymmetry is based on resource interdependencies among actors. Actors initiate collaboration in an attempt to control their interdependencies with other actors of the domain (Aldrich, 1976, 1979; Benson, 1975; Pfeffer & Salancik, 1978).

Once actors perceive the need to collaborate, the process of collaboration is initiated. This process can be understood as constituted by three phases: problem setting, direction setting and implementation (Gray, 1989; McCann, 1983). The *problem setting* phase involves the exploration of the domain-level problem and identification of those actors with a stake in it; the *direction setting* phase comprises the development of agreements about valued, shared goals and actions. These first two phases essentially require domain actors to engage in dialogue (to be discussed in Chapter 2) whereby the domain-level problem is addressed. Finally, in the *implementation* phase, steps are taken to ensure follow-through on the agreements reached if formal collective mechanisms have been created. The main activities which take place during these phases are shown in Table 1.1.

**Table 1-1: Three-phased collaboration model**  
**- adapted from McCann (1983) and Gray (1989)**

Collaboration phase	Main activities
Problem setting	Structuring of domain-level problem Stakeholder identification
Direction setting	Articulation of shared values and goals Articulation of alternatives for action Making choices about portfolio of options Reaching joint agreements about future direction
Implementation	Implementation of joint agreements Development and implementation of regulative frameworks

At the start of collaboration, actors usually begin with different, often fragmented, conceptions of the domain-level problem (Nathan & Mitroff, 1991; Vaughan & Siefert, 1992). In addition, they often have limited conceptions of how their actions impinge on other parties and incomplete or mistaken perceptions about what the other participants want or believe (Gray, 1989; Vansina & Taillieu, 1997). By collaborating, the divergence in the actors' views, interests and knowledge becomes a valuable asset, enabling actors to develop a rich, shared picture of the domain-level problem before they reach agreement on a shared problem definition and potential options for subsequent action (Gray, 1989). Thus through collaboration, actors who previously shared no common meanings about the domain can mutually create shared meaning (to be discussed in Chapter 2).

A significant aspect of the collaboration process by which an inter-organisational domain is developed relates to how power (also to be discussed in Chapter 2) is mobilised by actors to influence the domain (e.g. Agranoff & McGuire, 2001; Bryson & Crosby, 1992; Child & Faulkner, 1998; Gray, 1985; Gray & Hay, 1986; Himmelman, 1996; Mayo & Taylor, 2001). Gray (1989), for example, distinguishes four types of power which can be mobilised to influence the development of the domain: power to mobilize, power to organise, power to control the agenda and information, and power to influence or authorise action.

The *power to mobilise* is expressed through the capacity of actors to mobilise resources in order to effectively resist their exclusion from the domain. The *power to organise* the domain stems from actors' capacity to shape the boundaries of the domain and create the forums in which domain-level problems are addressed. The *power to control the agenda and information* is associated with the ability of actors to control how issues and information are addressed within the domain. Finally, actors with *power to exercise influence or authorise action* will ensure that joint agreements will be successfully implemented.

Actors with more power can be expected to use it to construct the domain to their advantage (e.g. Benson, 1975; Brown, 1980; Day & Day, 1977; Hardy, 1994a; Hardy & Phillips, 1998; O'Toole & O'Toole, 1981). As Hardy and Phillips (1998) argue, if actors have a stake in the domain, and the domain is socially constructed, then "it is in the interests of each stakeholder to do everything possible to ensure that the domain is constructed in a way that affords it the most advantage" (Hardy & Phillips, 1998, pp. 218-219).

One way in which stakeholders can influence the construction of the domain is by (re)defining the problems that constitute the domain. These problems are not objectively present in the domain but are shared as a result of social interaction among the domain actors. They are defined through conversational processes which create meaning for them (Blumer, 1971; Dutton & Duncan, 1987; Eden, 1986; Eden et al., 1981; Ford & Ford, 1995; Hardy, Lawrence, & Grant, 2005). These dialogical processes are essentially problem structuring activities which are influenced by the interest and actions of actors with a stake in the domain.

The way in which a problem is structured and defined has important implications for the subsequent direction of the domain. For it limits the potential nature and outcome of inter-organisational interaction and plays an important role in determining who participates in the development of the domain (Gray, 1989; Gray & Hay, 1986; Gricar & Brown, 1981; Hardy & Phillips, 1998; Hardy, Phillips, & Lawrence, 1998; McGuire, 1988). For example, a particular problem definition

may lead actors with a stake in the domain to form coalitions so that certain participants can be included or excluded from the domain (Eden, 1996). Problem structuring, therefore, is a significant mechanism through which stakeholders can exercise power and influence the construction and development of the domain.

It has been argued that the participation of stakeholders in the construction of the domain depends upon the perceived 'legitimacy' of stakeholders. Gray (1989), for example, argues that an actor has legitimacy to participate when this actor is perceived by the other domain actors to have not only the right but also the capacity to participate in the domain. Legitimacy, however is not an objective state, but one based on power (Frost, 1987) and created through the management of meaning (to be discussed in Chapter 2) (Czarniawska, 1986; Pettigrew, 1979; Smircich & Morgan, 1982). Consequently, actors of a domain require sufficient power to demonstrate they have a 'legitimate' right to participate in its development.

Therefore, power is a central aspect of the construction and development of an inter-organisational domain. As collaboration is the process through which a domain develops, power is also central to collaboration. Furthermore, as discussed earlier, shared meaning is one of the products of successful collaboration, which is created through dialogue. Given that dialogue is influenced by the interests and intentions of domain actors, it is not unreasonable to postulate that for shared meaning to emerge during collaboration, adjustments in the power relations among actors of a domain will be needed. Otherwise there is the risk that the domain will not develop through collaboration but through compliance, contention or contestation<sup>3</sup> (Hardy & Phillips, 1998). It follows that the collaboration process ought to be assisted by mechanisms capable of facilitating dialogue and mutual adjustments in the power balance between domain actors.

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<sup>3</sup> *Compliance* occurs when dominant actors use their power to regulate weaker actors which have no choice but to cooperate. In *contention* involves weaker actors attempting to overturn existing domain parameters in order to get access to the domain and, in so doing, challenging powerful domain actors. In the case of *contestation*, a weaker actor challenges powerful actors but only within the limits of existing domain parameters (Hardy & Phillips, 1998).

Some scholars (e.g. Bryant, 2003; Eden, 1996; Franco, Cushman, & Rosenhead, 2004; Friend, 1993; Friend & Hickling, 1997; e.g. Huxham, 1996; Taket & White, 2000) have suggested that problem structuring methods (PSMs) (to be discussed in Chapter 4) can be useful mechanisms in helping actors of a domain who engage in collaborative activities. PSMs are a family of participatory and interactive methods developed within the discipline of operational research (OR), whose purpose is to assist groups of diverse composition gain a better understanding of a problematic situation of common interest, and which is characterised by high levels of complexity, uncertainty and conflict. This is achieved through the explorations of different perceptions, and facilitating dialogue and negotiation, with a view to generating consensus on problem structure, and usually, on initial commitments to consequential action (Rosenhead, 1996; Rosenhead & Mingers, 2001).

Indeed, it can be argued that the contextual characteristics of domain-level problems described earlier broadly correspond to those for which PSMs were specifically designed. The purpose and characteristics of PSMs appears to make them potentially valuable in assisting collaborators to structure and define the domain-level problem, to articulate the values affected by their choices with respect to it, and to make mutual adjustments in order to reach joint agreements about the future of the domain.

However, in spite of the reported success of PSMs applications with collaborative groups, no theoretical arguments justifying the appropriateness of PSMs in this context have been advanced so far. In particular, no theoretical models have been presented concerning how dialogue about the domain-level problem is facilitated by PSMs during collaboration. Furthermore, it is not clear whether PSMs are capable of handling asymmetrical power relations among actors (e.g. Healey, 1997; Jackson, 1982, 2000; Mingers, 1992; Willmott, 1989). There is therefore a case for investigating the potential of PSMs in assisting actors who engage in collaboration to address a domain-level problem and reach agreements with respect to it, which in turn may contribute to the development of the inter-

organisational domain as a temporary negotiated order. This investigation may also contribute to the assessment of the role that PSMs may have in handling power dynamics among actors during collaboration.

Our broad hypothesis is that PSMs do have a role in assisting actors who engage in collaboration to address a domain-level problem, and reach joint agreements with respect to it. This broad hypothesis can be summarized as follows:

- the analytical assistance provided by PSMs will improve collaborators' dialogue about the domain-level problem;
- this improved dialogue will allow actors to jointly create shared meaning, and lead to an increased commitment towards enacting their reached agreements regarding the domain-level problem; and,
- these effects should tend to impact positively on the development of a temporary negotiated order for the domain.

In order to express the above hypothesis more precisely, a clarification of concepts is first needed. In Chapter 2, several key concepts that emerge in the literature of both inter-organizational collaboration and PSMs are discussed. The concepts of *shared meaning*, *power*, and *dialogue* are defined in an operational way.

Based on this conceptual development, a model of the collaboration process is built in Chapter 3. This model is intended to provide a plausible representation of the factors associated with the emergence of shared meaning about a domain-level problem among actors, and the development of joint agreements with respect to it. The model builds principally on the work Gray (1989) on collaboration, Eden (1982; 1986; 1988) on group problem solving; and Hardy (1985; 1994b; 1996) on power. The elements of the model consist of *domain-level problem*, *power base*, *dialogue*, and *implementation*. This model is intended to serve the function of deriving possible roles for the form of analytical assistance provided through PSMs to a collaboration process.

In Chapter 4, two analyses are carried out. First the characteristics of PSMs are discussed in preparation for the examination of the possible roles of PSMs in assisting actors engaged in collaboration. This discussion seeks to examine critically the claims which have been made for PSMs<sup>4</sup>. Second, based on the preceding analysis, a potential role for the analytical assistance provided by PSMs to a collaboration process is identified and argued for. Although there is no generally accepted framework for the assessment of PSMs (Eden, 1995, 2000; Eden & Ackerman, 1996; Finlay, 1998), for the purposes of this research this assessment will be based on dimensions specific to the collaboration process such as dialogue and power.

Chapter 5 discusses several potential research designs appropriate to empirically investigate PSMs within multi-organisational collaborations and formulates a particular research strategy, namely, action research (AR). This strategy is aimed both at exploring the adequacy of the conceptual model developed in Chapter 3, and also investigating in practice whether PSMs can indeed take up successfully the role identified in Chapter 4.

In Chapter 6, an account of the development of a PSM-based approach that can help in delivering the intended advantages of multi-organizational collaboration within the context of construction partnerships is given. The approach developed, named the Cross-Organisational Learning Approach (COLA), uses Strategic Choice methods (Friend & Hickling, 1997), both to focus on the key issues, and as the basis of the resulting review process. In Chapter 7, data generated from a case study derived from a construction partnership in the UK leisure sector are

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<sup>4</sup> Successful applications of PSMs with groups have been extensively reported in the literature (e.g. Ledington & Donaldson, 1997; Mingers, 2000; Mingers & Rosenhead, 2004; e.g. Mingers & Taylor, 1992; Munro & Mingers, 2002). Recently, however, concerns have been raised with regard to the validity of these claims. Indeed, the resulting evaluation debate (e.g. Eden, 1995, 2000; Eden & Ackerman, 1996; Finlay, 1998) has identified the lack in the literature of any formal evaluations of the effectiveness of PSMs, which has given rise to alternative proposals for evaluation. The main theme emerging from this debate is that any attempt at evaluating PSMs should be informed by an explicit conceptual model of the process in which the PSM researcher/consultant is intervening (Eden, 1992, 1995, 2000). The conceptual model developed in Chapter 3 will be used in this thesis as a means to empirically evaluate PSMs within a collaboration context. In doing so, we hope to be contributing to the PSM evaluation debate.



analysed using a grounded theory approach (Glaser & Strauss, 1967; Glaser, 1993; Strauss & Corbin, 1998).

The concluding Chapter 8 discusses lessons for PSMs and collaboration, and identifies areas for further research.

## **2 Conceptual framework**

As will be recalled from Chapter 1, the purpose of the research reported in this thesis is to identify and evaluate the possible roles of PSMs in assisting actors engaged in a process of collaboration by which actors of an inter-organisational domain socially construct that domain. There are a number of key concepts which emerge, explicitly or implicitly, in the literature of both inter-organisational domains and PSMs, and which need to be clearly understood in order to formulate our research strategy appropriately and unambiguously. These concepts are ‘shared meaning’, ‘power’, and ‘dialogue’, and will be developed in the following sections.

The concepts to be elaborated below will subsequently be used to develop a model of the process of collaboration. This model will help to clarify the possible roles of PSMs (to be discussed in Chapter 4) in this process. Claims that have been made about this family of methods include: that they facilitate the emergence of a shared definition of the problematic situation of common interest, that they are participative, and that they enable less unequal dialogue (Eden, Jones, & Sims, 1983; Rosenhead, 1996; Rosenhead & Mingers, 2001; White, 1996). It is hoped that this research will help clarify whether PSMs are able to achieve shared meaning in a dialogue in which collaborators have different power sources.

The concepts of shared meaning, power and dialogue are all interconnected and interdependent and thus it is to an extent arbitrary which one is discussed first. Our discussion begins with the concept of shared meaning. In elaborating the concept of shared meaning, there will be need to clarify first the concept of ‘meaning’.

### **2.1 Meaning and shared meaning**

Shared meaning is a significant aspect of the process of collaboration. As discussed in Chapter 1, through collaboration, actors who previously had no

common meanings about the domain can mutually create shared meaning. Furthermore, the creation of shared meaning about a domain is considered a necessary condition for the domain to develop as a temporary negotiated order (e.g. Gray, 1989; Trist, 1983).

The importance given to the concepts of meaning and shared meaning in the literature stems from the need to understand how groups make collective sense of their experiences and how they come to take coordinated action. It is commonly held that individuals act in an organised fashion as a result of sharing a common set of meanings or interpretations of their joint experience (Louis, 1980; Pfeffer, 1981; Smircich, 1983; Van Maanen, 1979).

In what follows we will structure our discussion by reviewing the concepts of meaning and shared meaning from two different perspectives: as a cognitive phenomenon, drawing principally on the phenomenological work of Schutz (1967); and as a relational phenomena (that is, as a system of interrelated concepts).

### *2.1.1 Meaning and shared meaning as cognitive phenomena*

A cornerstone of phenomenology is the notion that all meaning and knowledge is rooted in the subjective view of the individual (Mead, 1964; Merleau-Ponty, 1962; Schutz, 1967). Meaning can only be understood from the point of view of the individual who assigns idiosyncratic meanings to his or her experiences of the world. The personal meaning an experience has for an individual arises from the relationship between the meanings created through personal experience and those created through social interaction between individuals (Huspek & Kendall, 1991).

According to phenomenologists, all meaning results from a conscious individual directing attention towards objects in his or her own world (Deetz, 1973; Stewart, 1978). Thus meaning emerges as a relationship or dialogue between subject and object, perceiver and perceived in consciousness (Stewart, 1978).

Working principally from the foundations laid by Weber (1964), Schutz (1967) attempted to clarify the process of creating meaning through personal experience. According to Schutz, human beings have three levels of experience, of which the latter two are considered 'meaningful'. The first level of experience is a pre-phenomenological 'lived experience'. It represents an undifferentiated stream of continuous, transitional experiences each melting into another. This stream of experience has no contours, no boundaries and no differentiations, and is therefore meaningless.

At the second level, we step outside the stream of experience and direct conscious attention back towards it. This act of reflection marks the undifferentiated stream of experience into phases, thus dividing, classifying and differentiating it into objects of attention to which the individual assigns meaning. Schutz (1967) argues that the particular kind of attention we give at the moment of reflection gives the new differentiated stream of experience a particular meaning. Thus personal meaning is not purely subjective, as our conscious attention is always directed towards some object, nor it is purely objective, as we provide our own modifications to the stream of experience.

Finally, at the third level of experience, personal meanings can be synthesised into an 'interpretive scheme' or 'schema'. Schemas are devices that we use to interpret future experiences. For example, several negative experiences with small planes may be synthesised into a larger schema that will indicate the attitudes (or meanings) taken towards different types and sizes of aircraft. In other words, the schema synthesises earlier meanings and is used as an organising structure to classify and give meaning to future experiences. This process of ordering experiences under schemas by means of synthesis is what Schutz (1967) terms interpretation: "Interpretation...is the referral of the unknown to the known, of that which is apprehended in the glance of attention to the schemes of experiences" (Schutz, 1967 p. 84).

Meanings are also created during social interactions through a process of internalisation (Berger & Luckmann, 1966). Internalisation is the process by which the manifestation of another individual's subjectivity becomes meaningful to us. For example, I see someone crying and I interpret it as expressing sadness. However, the objective availability of an individual's subjectivity does not necessarily mean that our interpretation is adequate. In the same example, the individual might have been crying because he or she was happy.

Related to, but analytically distinct from personal meaning, is shared meaning. According to Gray *et al* (1985), shared meaning emerges when, during the course of regular social interaction, members of a group begin to favour one interpretation over another. In this way, group members generate coincident expectations about patterns of reciprocal behaviour. Repeated confirmation (by oneself and by others) that these reciprocal behaviours produce the anticipated outcomes leads members to assign meaning to the behaviour. When several members are guided by similar meanings about the anticipated consequences of behaviour, it is said that a 'constitutive rule' governs behaviour (Harris & Cronen, 1979). These constitutive rules are analogous to Schutz's (1967) concept of interpretive schema in that groups of individuals may share constitutive rules to organise their experiences and make them meaningful within larger schemes. Shared meaning then, is facilitated to the degree that individuals employ similar interpretative schemas or constitutive rules for ordering and interpreting their experiences.

The emergence of shared meaning not only involves the use of similar interpretive schemas or constitutive rules. It has been argued that meaning creation also involves what Epstein (1979; 1983) terms 'valuing'. That is, the connecting of our interpretive schemes with our value systems. These value systems are not manifest in everyday communication but constitute tacit structures, and therefore, are not necessarily part of conscious awareness (Franks, 1974; Habermas, 1971; Polanyi, 1958). This notion of valuing is expressed slightly differently by Vickers (1965): "Judgments of value give meaning to judgment of reality" (Vickers, 1965

p. 40). He defines value judgements as those judgements we make about the significance to ourselves of some selectively perceived facts about reality. Thus personal interests are a primary concern in the creation of meaning. If meaning cannot be separated from the underlying interests of individuals, then shared meaning must also involve 'joint valuing' (Gray, Bougon, & Donnellon, 1985).

In summary, for shared meaning to emerge individuals not only have to use similar interpretive schemas, but must also hold similar views about how their experience affects their personal welfare. Shared meaning then refers to the degree to which individuals exhibit agreement on both the interpretive schemas and the value systems they use for meaning creation.

It is important to note, however, that shared meaning is not created in a political vacuum. Actors will compete to instil their own interpretive schemes and value systems (Fine, 1991; Huspek & Kendall, 1991). These competitions take place in a context where actors usually have differential access to the communication devices necessary to disseminate and legitimise their interpretive schemes and value systems (Deetz & Mumby, 1985). This means that it is the interpretive schemes and value systems of the powerful which tend to become disseminated and legitimised. Thus the emergence of shared meaning among actors is essentially a political process in which power plays a crucial role. The important concept of power will be elaborated later in Section 2.2.

So far we have discussed the creation of meaning and shared meaning from a phenomenological perspective. As stated earlier, one of the concerns of this research is whether the analytical assistance provided through PSMs can facilitate the emergence of shared meaning during collaboration. In the PSM literature, the emergence of shared meaning is usually referred to as the creation, by actors, of a shared definition of a problematic situation of common interest (e.g. Eden, Jones, & Sims, 1983). Inherently in this view is the notion that individuals describe the problematic situations they face in terms of a system of interrelated concepts.

Meaning and shared meaning are thus understood as relational phenomena. This will be discussed next.

### *2.1.2 Meaning and shared meaning as relational phenomena*

From a relational perspective, meaning is encoded in the form of concepts. Concepts result from a categorisation process by which we group similar experiences. It has been suggested that concepts are classes of objects that can be defined by identifying one or more properties common to all members of that class (Rosch, 1973; Rosch & Mervis, 1975; Rosch et al., 1976). For example, males are distinguished from females and triangles from squares in this way.

Initially concepts arise through the direct assignment of an object or event to a (superordinate) category through the use of the category's label. Repeated use of the concept label among members of a speech community confirms its coincident denotative value and establishes the basis for communication and regularity in social relations, because the meaning of these concepts is normally taken to remain constant.

It should be noted that most concepts cannot be defined by properties alone. Some members of a category may have no properties in common, but instead derive similarity by sharing a gestalt<sup>5</sup> (Bolinger, 1965; Miall, 1982). For concepts of this type, context is central to their definition. That is, they are only understood in relation to other concepts referred to in the same context. Concepts assume clearer meaning the more the context is specified. Contextual clues are frequently necessary to select the appropriate concept in the first place, and beyond that, contextual clues elaborate the meaning an individual attaches to a concept. Hence, the meaning of a concept resides not only in its properties but also in its pattern of relations with other concepts present in a particular context. For example, the concept of 'love' when related to the concept of 'hate' in a particular context will

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<sup>5</sup> A gestalt is a configuration or pattern of elements so unified as a whole that it cannot be described merely as a sum of its parts

have a different meaning when it is related to the concept of 'indifference' in a different context.

As a result, the content and the meaning of a concept are particular to an individual and to a situation. Since the meaning of a concept flows from its embeddedness in a network of other concepts, obtaining shared meaning among individuals would imply the use of similar networks of concepts. The degree of similarity between these networks has been extensively explored in terms of comparing individuals' cognitive maps (Eden, Ackermann, & Cropper, 1992; Eden, Jones, & Sims, 1983; Ford & Hegarty, 1984; Huff & Jenkins, 2002; Markoczy & Goldberg, 1995; Nicolini, 1999; Weick & Bougon, 1986). A *cognitive map* consists of the set of concepts and their interrelations which an individual uses to understand a particular situation (Weick & Bougon, 1986). The assembling of several individual cognitive maps results in a collective map. It is this collective map that is usually associated with shared meaning (Bougon, 1992; Eden, 1988; Eden, Jones, & Sims, 1983; Weick & Bougon, 1986).

Two main approaches to creating collective maps can be distinguished in the literature: average (Bougon, Weick, & Binkhorst, 1977; Ford & Hegarty, 1984; Weick & Bougon, 1986) and composite (Eden, 1988; Eden & Ackerman, 2001; Eden, Jones, & Sims, 1983). The *average* approach to collective maps draws on the work of Weick (1979) and Axelrod (1976), and involves the development of cognitive maps for individuals each in the form of a grid (see Table 2.1) containing the concepts that are deemed relevant with regards to the description of the experiences of the participant.



**Table 2-1: Example of a cognitive map as a grid**

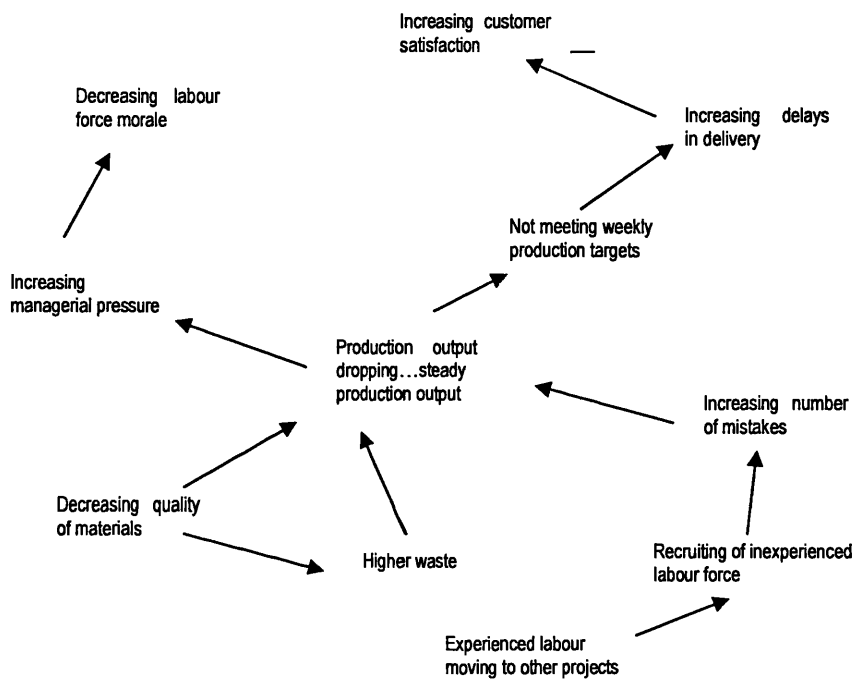
	Concept A	Concept B	Concept C	Concept D
Concept A				+1
Concept B	+1			
Concept C		+1		
Concept D				

Each cell entry has either a - 1 (indicating an inverse causality relationship between the column and row concepts) or a +1 (indicating a direct relationship). The collective map is then obtained by taking the average of the corresponding cell scores for all individual cognitive maps. If, for example, the cognitive maps of 10 individuals are elicited, the cell entries in the average map could range from -10/10 to +10/10, depending on the number of individuals who thought a relationship existed and the direction of the relationship. The average map, therefore, is the arithmetic mean of the signed links reported by the individuals. Causality relations mentioned by a significant number of individual can then be treated as indicative of shared meaning.

The *composite* approach to collective cognitive maps was developed by Eden and his associates (Eden, 1988; Eden & Ackerman, 2001; Eden, Jones, & Sims, 1983) and is based on Kelly's (1955) theory of personal constructs. In this approach cognitive maps consist of concepts and their relationships represented by nodes and links. The nodes representing concepts in the cognitive map are not mere labels: the meaning an individual assigns to a concept depends on what he or she contrasts it with. That is, the meaning of a concept depends on its opposite pole. For example, the meaning of the concept 'production output dropping' will depend whether it is contrasted with 'production output increasing' or with 'steady production output'. The links between concepts can either indicate an

inverse causal relationship (an arrow with a '-' sign), or a direct causal relationship. Properties or attributes of concepts can also be included in the maps via connotative links to clarify meaning. An example of a cognitive map as a network of nodes and links is shown in Figure 2.2.

**Figure 2-1: Example of a cognitive map as a network of nodes and links**



The collective map then is obtained by: (a) carefully merging all concept labels presumed to denote similar meaning; (b) merging all concept labels that are the same in the individual cognitive maps with vigilance for similarity of meaning; and (c) linking all concept labels in the individual cognitive maps that denote concepts which ought to have been linked (Eden & Ackerman, 2001; Eden, Jones, & Sims, 1983). The composite approach to collective maps differs from the average approach in that in the former case, collective maps are validated through discussion and negotiation among participants.

In summary, the process of creating a collective map involves some form of aggregation procedure. When there is enough degree of commonality between

individual cognitive maps<sup>6</sup>, the resulting collective map is indicative of shared meaning which, as stated earlier, is a prerequisite to produce organised action (Bougon, Weick, & Binkhorst, 1977; Donnellon, Gray, & Bougon, 1986; Eden, Jones, & Sims, 1983; Gray, Bougon, & Donnellon, 1985; Langfield-Smith, 1992; Louis, 1980; Pfeffer, 1981; Smircich, 1983; Van Maanen, 1979; Weick, 1979; Weick & Bougon, 1986).

Collective maps can then represent shared meaning but are also instrumental in achieving shared meaning. Throughout this thesis, the achievement, by actors, of a shared definition of a domain-level problem will be considered a pre-requisite of the creation of shared meaning and the production of coordinated action. A shared definition of a domain-level problem can be represented by a collective map. However, it is important to notice that maps are not the only means through which actors can arrive at a shared definition of a domain-level problem. Any explicit shared representation which captures the concepts (and their relationships) used by actors to describe a domain-level problem, can be used to develop a shared definition and thus shared meaning. PSMs have as their characteristic the development of a shared model representing the different perceptions of actors with regards to a problematic situation. This model is then used to help actors arrive at a shared definition of the problem situation. The discussion of PSM models will be deferred until Chapter 4.

In this preceding discussion, the concepts of meaning and shared meaning have been elaborated from both phenomenological and relational perspectives. The latter can be seen as building upon the former by making explicit how individuals create individual and shared meaning about their world. The importance of elaborating the concepts of meaning and shared meaning within the context of this research, it may be recalled, is that the creation of shared meaning is one of the

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<sup>6</sup> It should be noted that some scholars have suggested that 'equifinal meaning' rather than shared meaning may be the only requirement for organised action (Donnellon, Gray, & Bougon, 1986). This means that it is not necessary for individuals to agree on what a set of potential actions means, nor it is needed for these individual to have the same reasons for supporting these actions. The only requirement would be that these individuals want these actions implemented. This perspective differs fundamentally from the approach to meaning advocated in this thesis and thus we will not pursue it further.

products of successful collaboration. A hypothesis of interest in this thesis is whether analytical assistance, through PSMs, can facilitate the emergence of shared meaning during collaboration.

Arriving at a shared definition of a domain-level problem is, as already mentioned in Chapter 1, a critical aspect of the social construction of an inter-organisational domain. Also, as discussed in Section 2.1, the creation of shared meaning is a political process and actors' power (or lack of power) will affect their ability to participate effectively in this process. The following section will elaborate the concept of power.

## **2.2 Power**

Power is a complex, multidimensional concept which has received a variety of theoretical conceptualisations. Among the different approaches proposed for the analysis of power are those of Pfeffer (1981), Hardy (1985), Boulding (1989), Clegg (1989), Wrong (1995), Bourdieu (1996) and Dowding (1996). In broad terms, power can be conceived as the ability to affect the behaviour of others in a conscious and deliberate way. This definition implies that coercion, manipulation, authority, persuasion and influence are all expressions of power.

The discussion of power in this section is organised in four parts. In the first part, the influential work of Lukes (1974), who provides a particularly useful presentation of power in terms of three dimensions of increasing sophistication, will be reviewed. In the second part, an important distinction will be made between sources of power used in the face of conflict and those used to prevent conflict from arising in the first place. This distinction will be based on the framework developed by Hardy (1985). In the third part, a second distinction is made between actors who benefit from their conscious mobilisation of power through political strategies and those who benefit inadvertently from the power that resides in any given institution or social system. The notion of the 'power of

the system' will be elaborated drawing principally on the work of Foucault (1977; 1980; 1982; 1984).

### *2.2.1 Three dimensions of power*

Lukes (1974) linked the first dimension of power to the work of the pluralists (e.g. Dahl, 1957; Polsby, 1963). The focus here is on the decision-making process. The powerful are those who are able to influence this process in order to obtain the decision outcomes they want.

Three main assumptions underlie the one-dimensional view of power. Firstly, it is assumed that individuals are aware of their grievances and act upon them by participating in the decision making process and using their influence to determine key decisions. Secondly, the exercise of power is assumed to occur only in decisions where conflict is clearly observable. Finally, it is assumed that conflict is resolved during the decision making process. In summary, the first-dimensional view of power focuses on the overt exercise of power in the decision-making arena.

Awareness of the second dimension of power developed as researchers began to question pluralist assumptions, in particular, the view that decision making arenas were open to anyone with an interest in them and that, therefore, non-participation reflected satisfaction and consensus (Bachrach & Baratz, 1962, 1963; 1970; Lukes, 1974). Researchers started to consider the possibility that conflict can exist without being necessarily articulated through official channels.

Subsequent work examined how full and equal participation might be constrained by "the suppression of options and alternatives that reflect the needs of the non-participants. It is not necessarily true that people with the greatest needs participate in politics most actively – whoever decides what the game is about also decides who gets in the game" (Schattschneider, 1960, p. 105). Specifically, Bacharach and Baratz observed that issues could be excluded from decision

making, and the agenda confined to safe issues. This process they called 'non-decision making', because it allows the more powerful actors to determine outcomes from behind the scenes.

Luke's (1974) noted that power can be mobilised not only to prevent issues from entering the decision-making arena but also to prevent issues and conflict from arising at all. This use of power in this form gives rise to Lukes' (1974) third dimension. Here, power can be used to shape people's "perceptions, cognitions and preferences in such a way that they accept their role in the existing order of things, either because they can see or imagine no alternative to it, or because they view it as natural and unchangeable, or because they value it as divinely ordained and beneficial" (Lukes, 1974, p. 24).

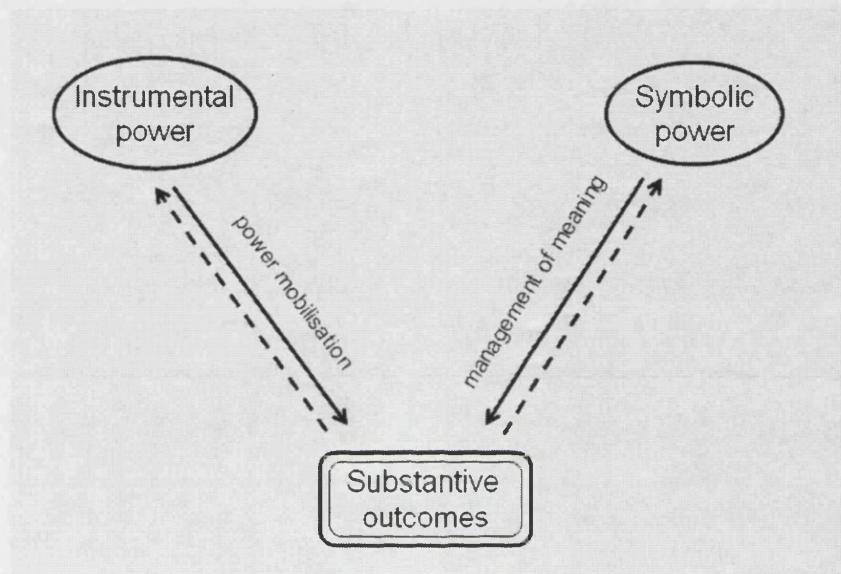
According to Lukes' (1974), the study of power cannot be confined to observable conflict, to the outcomes of decisions, or even to suppressed issues. It must also consider the question of political inactivity and quiescence: why grievances do not exist, why demands are not made; why conflict does not arise; and why resistance does not occur, for these may be the result of the exercise of power (Gaventa, 1980; Lukes, 1974; Saunders, 1980).

The third dimension of power is therefore substantively different in the assumption it makes regarding conflict: power is used not simply to defeat conflict but to prevent it from arising in the first place. This use of power revolves around attempts to create legitimacy and justification for certain ideas, procedures, actions and outcomes so that they are never challenged (Hardy, 1985; Pfeffer, 1981). Actors make use of power to engage in what has been termed the 'management of meaning' (Chafee, 1985; Clegg, 1975; Czarniawska, 1986; Frost, 1987; Frost & Egri, 1989; Hardy, 1985, 1994; Pettigrew, 1979).

Lukes' (1974) three dimensions of power clearly illustrate the developments in the way power has been studied. Luke's (1974) third dimension is particularly important for this research because it specifically addresses the issue of power to

prevent conflict by managing meaning. Hardy (1985; 1994b), following Lukes (1974) and also Pfeffer (1981), provides a useful model of power described above by re-classifying the three dimensions of power into two distinct categories as shown in Figure 2.3.

**Figure 2-2: Instrumental and symbolic aspects of power**  
- adapted from Hardy (1985; 1994b)



The ability to secure preferred outcomes in the face of conflict Hardy (1985) terms 'instrumental' power. It encompasses the first two dimensions: power may be exercised in the decision-making arena to produce favourable decisions (first dimension) or to keep issues out of the decision-making arena (second dimension). Actors secure preferred outcomes in spite of opposition and conflict through the conscious mobilisation of instrumental power. On the other hand, the ability to legitimise outcomes through the management of meaning Hardy (1985) terms 'symbolic' power (Hardy, 1985, 1994b; Pfeffer, 1981). The dotted arrows in Figure 2.3 indicate that the existence of certain outcomes may affect the power bases of the actors involved.

Implicit in the formulations that have been discussed so far is the existence or availability of power sources to actors if they were to exert power. These are discussed in the following section.

### *2.2.2 Sources of power*

The most evident sources of instrumental power are grounded in differential access to scarce or critical resources. Because resources are differentially distributed, some actors are dependent upon others for access to them. Dependency relations confer power on those providing resources to others (Blau, 1964; Emerson, 1962; Pfeffer & Salancik, 1978; Thibaut & Kelly, 1959). The successful control and management of these resources allows actors to influence decisions, agendas, resource allocations and the implementation of decisions. For example, the ownership of land and control of information have been found to be particularly important sources of instrumental power (Boulding, 1989; Dahl, 1961; Friedmann, 1992; Galbraith, 1986; Lukes, 1986; Pettigrew, 1973; Pfeffer, 1981). Instrumental power has been related to the ability to control uncertainty (Crozier, 1964; Hickson et al., 1971; Pfeffer, 1981). Credibility, stature, prestige, charisma and personal appeal can also confer instrumental power (Dahl, 1961; Dowding, 1996; Lukes, 1986; Pettigrew, 1973; Pfeffer & Salancik, 1974; Salancik & Pfeffer, 1974; Wrong, 1995). Other sources of instrumental power include access to and contacts with higher echelons or decision-making bodies and the control of money, rewards and sanctions (Benfari, Wilkinson, & Orth, 1986; Boulding, 1989; Dahl, 1961; French & Raven, 1968; Friedmann, 1992; Rosenstone & Hansen, 1993).

Mere possession of scarce resources does not in itself confer instrumental power. Actors must also be aware of them, and able to control and tactically use them if they are to be successful in achieving desired outcomes (Burns, 1961, 1966; Burns & Stalker, 1961; Pettigrew, 1973).



By contrast, sources of symbolic power are grounded not in resources and process interdependencies but in the ability of actors to give meaning to events and actions, and to influence the perceptions of others so they either remain unaware of the adverse implications of decision outcomes or even view them in a favourable way. In other words, actors define reality not only for themselves but for others.

According to various epistemological and theoretical stances individuals have a degree of freedom in defining reality. Social action theory, for example, suggests that reality is socially constructed but that the meanings are given to us by society and society defines us and we define society in a two-way process (Silverman, 1970). Phenomenology (Mead, 1964; Merleau-Ponty, 1962; Schutz, 1967), on the other hand, argues that meaning is still subjective but reality lies in the inter-subjective set of concepts and value systems which are used by individuals to make sense of their experiences (see Section 2.1.1). In other words, reality is perceived individually but, because new experiences are classified on the basis of past experiences and stocks of knowledge, it is contextually and culturally grounded. Consequentially, there is likely to be a high degree of inter-subjectivity between individuals in similar situations (Burrell & Morgan, 1979).

Hardy (1985) views the sources of symbolic power as differentially distributed throughout society in much the same way as the instrumental sources of power. This means that some groups will be more likely to possess these sources but that in certain circumstances there will be some sources that less dominant groups can seek and use. A variety of mechanisms can be consciously used by actors in their attempts to mobilise symbolic power. These include the use of language, myths, rituals, ceremonies and settings (Hardy, 1985). *Language* can work as a vehicle to mobilize support, or a device to cloud issues and silence opposition (Edelman, 1964). Mueller (1973) points out how the obfuscation of political reality can be achieved with the use of a highly evocative language. Martin (1977) points out that groups who can perceive their situation experientially but are unable to translate these specific experiences into general terms will be unable to adequately

define their own position. This will, in turn, inhibit political activity. Language, therefore, is likely to be an important device in both restricting opposition and gathering support. *Myths* have been defined as fictional narratives and, more explicitly, as narratives of events which explore issues of origin and transformation (Cohen, 1975; Pettigrew, 1977, 1979). Myths can be used to legitimise current power positions (Cohen, 1975; Gaventa, 1980; Pettigrew, 1977, 1979), by emphasising the importance of the past and tradition. Finally, *rituals*, *ceremonies* and *settings* are the more physical aspects of symbolic power. Ritual and ceremony are procedures which convey certain meanings (Barley, 1983; Pettigrew, 1977, 1979). So, for example, the ceremony of dismissal and replacement might be used to signal change, discredit past practices or warn others. Settings, including the grandeur of rooms and the seating arrangements, can express the importance assigned to meetings and individuals (Peters, 1978).

It has long been argued that the sources of symbolic power can be utilised in the same way that instrumental power sources are mobilised (Hardy, 1985; 1994b; Lukes, 1974; Pettigrew, 1979). The difference between instrumental and symbolic power lies not only in the power sources which are used, but also in the uses to which these sources are put, i.e. whether to defeat opposition or to prevent opposition from arising<sup>7</sup>.

The instrumental (first and second dimensions) and symbolic (third dimension) aspects of power all involve deliberate conscious strategies on the part of the actors to mobilise power, thereby achieving their objectives either by defeating or circumventing opponents. In recent years, however, a number of developments have occurred in the study of power, which led some scholars to suggest the existence of a fourth dimension (e.g. Hardy, 1994b; Hardy & Leiba-O'Sullivan, 1998). This dimension draws attention to another aspect of power which may produce certain advantages and disadvantages for actors without being

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<sup>7</sup> In some cases, the power sources associated with the first and second dimensions can also be used to manage meaning and avoid conflict. For example, control over information and communication channels can be utilised not only to restrict the access to information but also to legitimise preferred outcomes and produce quiescence (Forester, 1989; French & Raven, 1968).

consciously mobilised. This aspect of power lies in the power of the 'system' which causes the unconscious acceptance of the values, traditions, cultures and structures of a given institution or society. This aspect of power is discussed next.

### 2.2.3 *The power of the system*

The work of Foucault (1977; 1980; 1982; 1984) emphasises the power of the system and the degree to which all actors are limited in resisting, much less transforming that system (Clegg, 1989; Deetz, 1992; Knights & Morgan, 1991; Knights & Willmott, 1989). Foucault contests the concept of autonomous power that underpins the first three dimensions. He rejects the idea of an isolated agent who possesses and mobilises a battery of power sources that can be used to produce particular outcomes. Instead, he conceptualises power as a network of relations and discourses<sup>8</sup> which captures advantaged and disadvantaged alike in its web. Actors may have intentions concerning outcomes, and may mobilise resources or engage in the management of meaning with the idea of achieving them, but using these power sources does not necessarily produced these desired outcomes. "People know what they do; they frequently know why they do what they do; but what they don't know is what what they do does" (Foucault, 1982, p. 187).

According to this view then, power is no longer a resource under the control of autonomous, sovereign actors. Instead, all actors are subject to 'disciplinary power', a prevailing web of power relations which resides in every perception, judgement and act (Deetz, 1992), and from which the prospects of escape are limited for dominant and subordinate groups alike. This means that prevailing discourses embedded in the system are experienced as reality, and alternative discourses are difficult to conceive of, let alone enact. Actors will more

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<sup>8</sup> A discourse is defined as an institutionalized way of thinking, a social boundary defining what can be said about a specific topic. Discourses are seen to affect our views on all things; in other words, it is not possible to escape discourse. For example, two distinctly different discourses can be used about members of a guerrilla movement, describing them either as "freedom fighters" or "terrorists". In other words, the chosen discourse delivers the vocabulary, expressions and perhaps also the style needed to communicate.

commonly engage in attempts to refute, challenge, modify or amend existing (rather than adopt or propose alternative) discourses, thus reinforcing existing power relations (Clegg, 1989; Knights & Morgan, 1991; Knights & Willmott, 1989). This is aptly illustrated by the prevailing discourse embodied in corporate strategy. The concept of corporate strategy which pervades contemporary management empowers those managers with strategic responsibilities and skills or those who form successful strategies by: (1) facilitating and legitimising their exercise of power; (2) proving a rationalisation of their successes and failures; and (3) conferring on them a corporate identity and role (Knights & Morgan, 1991). Some groups are disabled by the prevailing set of power relations: managers in personnel management have not benefited from the focus on strategy. This has led, for example, to the transformation of personnel into human resources management and an emphasis on the link between strategy and human resources. Similarly, some operational research (OR) publications now emphasise the role operational research can play in strategy making (e.g. Bell, 1998; Dyson, 2000; Eden & Ackerman, 2000). In other words, groups trying to resist the prevailing set of power relations, or discourse, embodied in corporate strategy may inadvertently reaffirm it.

Thus, although negative effects of power relations provide motivation for resistance, resistance tends to confirm those power relations rather than substitute new ones. This is because the web of power relations is so pervasive that all actors are captured by it.

In summary, power can be seen as working at four different levels. On the surface, power is exercised through the mobilisation of scarce resources, and through the control of decision making processes. At a deeper level, power is exercised by managing the meanings that shape others' lives. Deeper still, is the suggestion that power is embedded in the very fabric of the system; it constrains how we see, what we see, and how we think, in ways that limit our capacity for resistance. The four dimensions of power that have been discussed above are summarised in Table 2.1.

**Table 2-2: Four dimensions of power**

- adapted from Hardy (1994b) and Hardy and Leiba-O'Sullivan (1998)

	First dimension: decision making (instrumental)	Second dimension: non-decision making (instrumental)	Third dimension: symbolic	Fourth dimension: system
Focus:	Key decisions.	Non-decisions.	Hegemony.	Disciplinary power.
Concept of power:	Intended, deliberate, causal, visible.	Intended, deliberate, causal, less visible.	Intended, deliberate, causal, often invisible.	Not intended, not deliberate, arbitrary, invisible and pervasive.
Orientation	Explains how power is mobilised through decision processes to defeat opposition.	Explains how power is mobilised around decision processes to defeat opposition.	Explains how power is mobilised through the management of meaning to prevent opposition.	Explains the limits of power and resistance.
Influence on outcomes requires:	Acquisition of resources and ability to mobilise them.	Ability to gain access to the decision-making arena.	Consciousness raising and 'delegitimation' strategies to create will to resist.	(Not possible.)
Challenge to:	Elitism: view of power as concentrated in the hands of the few.	Pluralism: assumption of equal access to decision arenas and agendas.	Behaviourism: assumption that power is used only in response to conflict.	Autonomous power: view that power is in the control of the actors.

The study of power described in this section has been confined so far to its use by dominant groups to protect or advance their position. Hardy and Leiba-O'Sullivan (1998) argue that disadvantaged groups do have recourse to some forms of power that can be used to resist dominant groups through the deployment of resources, decision-making processes and meanings. In the case of the first dimension, suppose a disadvantaged group is able to get the issue to the decision arena. If it loses in this situation it is either due to the lack access to resources compared to

the dominant group, or an inability to mobilise them effectively. Thus a disadvantaged group could influence outcomes by accumulating more resources and/or learn how to use them more effectively.

In the case of the second dimension, a disadvantaged group loses through being unable to secure access to the decision making arena or being unable to mobilise the power embedded in those processes. For it to prevail against the second dimension, Hardy and Leiba-O'Sullivan (1998) argue, access to and knowledge of decision making processes must be secured. This will enable it to use these processes to challenge the status quo and increase participation in decision making and the setting of agendas.

Finally, Hardy and Leiba-O'Sullivan (1998) argue that fighting against the third dimension requires exploring power, used symbolically by the dominant group, through consciousness raising and de-legitimisation strategies that can unmask the political strategies of the dominant group and create a political will to fight.

In summary, all actors can use sources from any of the three dimensions of power to either justify or challenge the status quo. However, while these actions may bring about some change, the extent of it appears to be limited by the prevailing system (fourth dimension) which traps advantaged and disadvantaged alike and reduces the chances of radical change (Hardy & Leiba-O'Sullivan, 1998).

The preceding discussion has provided a conceptual basis for the treatment of power. Based on this discussion, it is now possible to identify which dimensions of power will be most central to the purposes of this research.

Collaboration does not take place in a political vacuum but within a domain in which a certain distribution of power is already deep-rooted (fourth dimension). One of the concerns of this research, it may be recalled, is with facilitating adjustments in the power relations among domain actors during collaboration. Asymmetries in power relations are reduced when, for example, less powerful

actors, who perceive they are likely to be impacted by the actions of other more powerful actors in the domain, are able to mobilise resources and decision-making process (first and second dimensions) to effectively resist their exclusion from the collaboration (Gray, 1985; 1989). As Gray (1989) notes, collaboration implies a “shift from the kind of unequal distribution of power associated with elitist decision making to more participatory, equally shared access to the decision making arena” (Gray, 1989, p. 120). Asymmetrical power relations are also decreased when more powerful actors release the resources needed for the implementation of joint agreements reached through collaboration. Therefore, the first and second dimensions of power are relevant to this research.

However, for the purposes of facilitating mutual adjustments in the power relations among domain actors through the provision of analytical assistance, the power mobilised through the management of meaning (third dimension) throughout the collaboration process is particularly significant. Asymmetrical power will be maintained or increased if the process of creating shared meaning has been controlled by powerful actors. On the other hand, asymmetrical power will be decreased if this process is free from the control of any one actor. A particular hypothesis of interest is whether the type of analytical assistance provided with PSMs can help advantaged and disadvantaged groups alike to mutually construct shared meaning in a process which is not controlled by any single party. The third dimension of power is, therefore, central to this research.

The emergence of shared meaning during collaboration presupposes reciprocal communication among actors. A particular form of communication that is relevant to this research is dialogue. The next section will examine the concept of dialogue together with the circumstances that enable dialogue to take place or impede it.

### **2.3 Dialogue**

This section will discuss the concept of dialogue. It will begin with a description of the general characteristics of all dialogue. These characteristics will be useful to

understand the differences between different types of dialogue which can occur during collaboration. There are three essential conditions for dialogue to occur, regardless of the type of dialogues actors engage in. First, there should be two or more participants in the dialogue. Second, each participant must have the ‘communicative competence’ (Habermas, 1970, 1984) to send (see Section 2.3.2) receive and understand the messages. Finally, the sequence of messages must move globally towards a goal.

In general terms, dialogue is what happens when two or more participants have a communicative encounter. More precisely, Walton (1992) defines dialogue as “a process of communication among two or more persons through a series of back and forth messages, in which these messages are organised in a sequence towards fulfilling a goal” (Walton, 1992, p. 82). Habermas (1970; 1984) refers to these back and forth messages as ‘speech acts’. He distinguishes five types of speech acts: imperatives, constatives, regulatives, expressives and commissives. *Imperatives* are used to influence the will of another (a request or a suggestion). *Constatives* serve to assert a truth claim (an assertion or a statement). *Regulatives* govern or regulate through a moral code (forbid, allow, warn) the interpersonal relationship between speaker and listener. In *expressives* a participant reveals his or her subjective thoughts or identity (thanks, apologise, welcome). And *commissives* are used to assure, affirm or deny claims.

A speech act thus represents a move in a dialogue from one communicative actor to another. The choice of speech act tends to be determined by the type of dialogue engaged in. These are discussed below.

### 2.3.1 Types of dialogue

Particularly useful in the discussion of dialogue that follows will be the typology developed by Walton (1989; 1991; 1992; 1998), who distinguishes six different types of dialogue depending upon the initial situation from which the dialogue arises, the goal of the dialogue, and the expected benefits of the dialogue (see



Table 2.3). The initial situation consists of the circumstances that cause dissatisfaction among different parties (individual or collective), thereby generating a motivation for dialogue. Participants seek to fulfil their own individual goals through engaging in dialogue.

**Table 2-3: Types of dialogue**  
- adapted from Walton (1989, 1991, 1992, 1998)

Type of dialogue	Initial situation	Goal	Benefits
Persuasion.	Conflict of opinion.	To persuade other party.	Understand positions.
Inquiry.	Need to establish a finding.	Contribute findings.	Obtain knowledge.
Negotiation.	Conflict of interest.	Maximise gains (self-interest).	Settlement and consensus.
Action-oriented.	Need for action.	Solution to problem.	Articulated goals and thoughtfully-based action.
Quarrel.	Personal conflict.	To defeat opponent.	Venting of emotions.
Information-seeking.	One party lacks information.	Obtain information.	Spread of information and second-hand knowledge.

For dialogue to work, co-operation is required between participants. Walton (1989) argues that each participant has an obligation to work towards fulfilling his or her own goals as well as cooperate to the fulfilment of the goals of the other participants. Benefits will be derived from dialogue depending on the extent to which individual goals have been achieved.

Of the six dialogue types shown in Table 2.3, three are particularly relevant to the collaboration process<sup>9</sup>: persuasion, negotiation, and action-oriented dialogue. These are explained below.

*Persuasion* is usually initiated because of the existence of conflict of opinions between participants. In this type of dialogue, each participant tries to demonstrate that a proposition or point of view is true or right, and based on evidence. A persuaded party will change his or her initial positions and commit to that of the persuader party. The expected benefit of persuasion dialogue is to increase the understanding between the (persuaded and persuader) parties.

Like persuasion, the *negotiation* type of dialogue is oriented towards the resolution of conflict (of interests in this case) between participants. Unlike persuasion, however, negotiation does not seek to prove a point of view nor does it seek for the truth. Instead, the goal of negotiation is to “make a deal” (Walton, 1998, p. 32). Concern with the truth of a matter is, generally, highly secondary to the goal of negotiation dialogue.

In negotiation, each party starts with a particular goal in mind, and the specific items in the goal comprise that party’s agenda. The conflict arises because there are differences between the goals of the parties. The expected benefit of negotiation dialogue is for the parties to achieve consensus and agree upon some point that partly meets the goals of all parties at the expense of losses on all sides. Thus the dialogue proceeds by each party making offers of concessions to the other. A concession is “an offer agreed to by one party that sacrifices some agenda items of that party while fulfilling some agenda items of the other party” (Walton, 1991, p. 44)

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<sup>9</sup> Quarrel, information-seeking and inquiry dialogues are not considered further in this thesis because their characteristics are not conducive to collaboration. In a quarrel, there are no rules and the aim is to win at all costs by verbally attacking the opponent. Clearly, being allowed to verbally attack an opponent is not the most desirable characteristic of a dialogue embedded in a process of collaboration. In information-seeking and inquiry dialogues, one of the sides to the dialogue takes on a rather passive role while the other takes on an active one by imparting knowledge or information. For our purposes, these dialogue types operate heavily through a one way flow of information or knowledge. This diverges from the way participants interact during the problem-setting and direction-setting phases of collaboration.

The need for action is initiated by *action-oriented* dialogue. In this type of dialogue, the goal of one party is to bring about a specific course of action by another party (or by both parties). Participants collectively seek to reach agreement on how to carry out an action which is of concern to them. This type of dialogue may (or may not) have well-organized rules of conduct, and involve persuasion and negotiation as part of the process. A particular sub-type of action-oriented dialogue is deliberation. In deliberation dialogue, each party exposes their preferred courses of action and priorities. These provide the grounds for discussing the possible future consequences of particular courses of action. The goal of the dialogue is to act on an informed and thoughtful base.

The types of dialogue described above are those likely to occur with the application of PSMs during collaboration (see Chapter 3). Indeed the analytical assistance provided by PSMs is claimed to help, among other things, in building a shared understanding of a problematic situation; in negotiations between parties and interests; and in arriving at commitment to a course of action, as will be discussed in Chapter 4.

So far the characteristics of three types of dialogue have been discussed, identifying their particular features and the initial situations in which each one is more appropriate. It is relevant to note, however, that for the goals of dialogue to be achieved, the quality of dialogue is also important. The following discussion will make partial use of Habermas' (1970; 1979; 1984) formulations on communicative action, in particular his ideas on the Ideal Speech Situation (ISS).

### 2.3.2 *Quality of dialogue*

Quality of dialogue is defined by Habermas (1970; 1979; 1984) in terms of the Ideal Speech Situation (ISS) and communicative competence. An ISS is one that allows communication between participants that is characterised by freedom, cooperation, and equality of opportunity for participants to openly express

themselves. Habermas argues that genuine communication between participants, which he refers to as 'linguistic exchanges', occurs when the exchanges are comprehensible, true, sincere and legitimate. A similar point is made by Forester (1989), who argues that without comprehensibility in communication there is no meaning but confusion; without truth it would be impossible to distinguish between fact and fantasy; without sincerity we have manipulation or deceit rather than trust; and without legitimacy we have abuse rather than the exercise of authority.

These four conditions of genuine communication will not be met if power (see section 2.2) is mobilised to produce distortions to the communication process (Forester, 1989; Hardy, Phillips, & Lawrence, 1998). Communications are distorted when some actors control the communication process for their own vested interests through the manipulation of resource-dependencies (e.g. by controlling the flow of information) or decision-making process (e.g. by restricting participation). Another way in which communications are distorted is when they are subject to the management of meaning. This occurs when, during dialogue, some participants impose certain patterns of meaning on others by introducing concepts, inculcating cause and effect relationships, and imparting values which make dialogue depart from the ISS. This is more likely to occur when participants present deficiencies in their communicative competences (Habermas, 1970, 1979, 1984).

Communicative competence within the ISS is determined by the skill and facility that participants have in speech and symbolic interaction. Thus the capacity of the participants involved in communicating with each other largely determines the quality of the communication process and thus dialogue. Differences between participants' communicative competences are likely to produce distorted communications and poor quality dialogue.

Deficiencies in the communicative competences of actors may be grounded in their differential access to symbolic and instrumental power sources. For example,

actors who are unable to translate their experiences into language (symbolic power source) will exhibit less communicative competence. Equally, actors will be unable to communicate effectively if they lack substantive and contextual information (instrumental power source). The differential access to power sources thus poses a limitation on actors' communicative competence which will have consequences during dialogue. Actors with limited communicative competence will from the beginning be in a less favourable position in relation to the other actors involved in the dialogue. The differences between participants will be noticeable throughout the dialogue when some participants are better able to express themselves, defend their positions, and achieve their goals. These differences will tend to bring about unbalanced dialogue. Unbalanced dialogue is thus a possible consequence of the limited communicative competence of participants.

Unbalanced dialogue is likely to have a negative effect on the quality of dialogue. To guard against poor quality dialogue, Habermas (1970; 1979; 1984) recommends that those engaged in dialogue strive for a communicative ethic. In practical terms (see Hardy, Phillips, & Lawrence, 1998; Keller, 1981; Payne, 1991), it means that conversations should ideally include all stakeholders, on an equal basis, with the freedom to represent their interests and participate in a fair and open dialogue, not limited by coercion, manipulation, secrecy, concealment, or deception. More powerful stakeholders should be responsive to the arguments and interest of less powerful counterparts (Bowen & Power, 1993). They should not appeal to a priori principles but foster a truly dialogic process in which all participants contribute equally (Fox, 1974; Freire, 1992).

When the conditions of a communicative ethic such as that advocated by Habermas (1970; 1979; 1984) are met, a more balanced dialogue is achieved and thus the quality of dialogue is improved. As stated earlier, this research is concerned with helping actors create shared meaning during collaboration. If dialogue is unbalanced, shared meaning can be created as a result of distorted communications. A more balanced dialogue, on the other hand, is more conducive

to shared meaning that is mutually constructed by all participants in the dialogue. A hypothesis of interest is whether the provision of analytical assistance, through PSMs, can improve the quality of dialogue between actors engaged in collaboration by making it more balanced. In Chapter 4, it will be explored whether the application of PSMs can achieve this by fulfilling the conditions of the communicative ethics discussed above.

Dialogue concludes the sets of concepts which will be used in this research to explore the possible roles of PSMs in a process of collaboration by which actors gain a broader appreciation of an inter-organisational domain and reach joint agreements with respect to its future direction. These are shared meaning, power, and dialogue.

In the next chapter, these concepts are used to develop a model of the collaboration process. This model will be useful to understand how the different elements of the collaboration process articulate with each other. It will also be useful to identify the elements which can be affected by the analytical assistance provided with PSMs.

### 3 Conceptual model of the collaboration process

The purpose of this chapter is to provide an integrated intellectual framework within which a possible role for analytical assistance in facilitating the emergence of shared meaning and the development of joint agreements during collaboration can be identified. Gray's (1989) three-phased model of collaboration, discussed in Chapter 1, is formative for us, but has not as yet addressed certain issues which are critical for research into the role of analytical assistance. In particular, there is no specification either of the pre-conditions required for the emergence of shared meaning, or of the activities which need to take place for shared meaning to be created.

If we are to make progress in understanding the role of analytical methods in the collaboration process, we need to have a representation which, on the basis of the literature so far reviewed and the established formulations and findings in the appropriate social science disciplines, looks plausible. To this end, a conceptual model<sup>10</sup> of the potential analytical contribution to collaboration will be developed in this chapter. This model is intended to serve the function of deriving a possible role for the form of analytical assistance provided by PSMs during collaboration. The theoretical basis is not itself subject to test as part of this research, but the theoretical basis of this model gives rise to a clearer role for analytical assistance which can be tested (see Chapter 5). In addition, the model may be hoped to increase general understanding of the collaboration process and the development of inter-organisational domains, and help generate testable hypotheses about how these might be improved.

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<sup>10</sup> Within the operational research (OR) and systems disciplines, a model typically tends to be a representation of a situation in the form of activities and/or flows which are in principle measurable. By contrast, a conceptual model (sometimes labelled as a 'conceptual framework') does not attempt to represent reality but to help organise those high-level, general concepts deemed to be relevant for the understanding of phenomena, and which are not necessarily subject to measurement (Miles & Huberman, 1994).

### 3.1 Overview of the conceptual model

The factors which have been identified (in the preceding chapters and in the literature about to be reviewed) as operating towards the emergence of shared meaning and the development of joint agreements during collaboration can be organised into four sets, which will be referred to as sub-areas. The main works upon which our categorisation of sub-areas is based are Gray's (1989) three-phased model of collaboration, Eden's (1982; 1986) model of group problem solving and Hardy's (1985; 1994b) model of power.

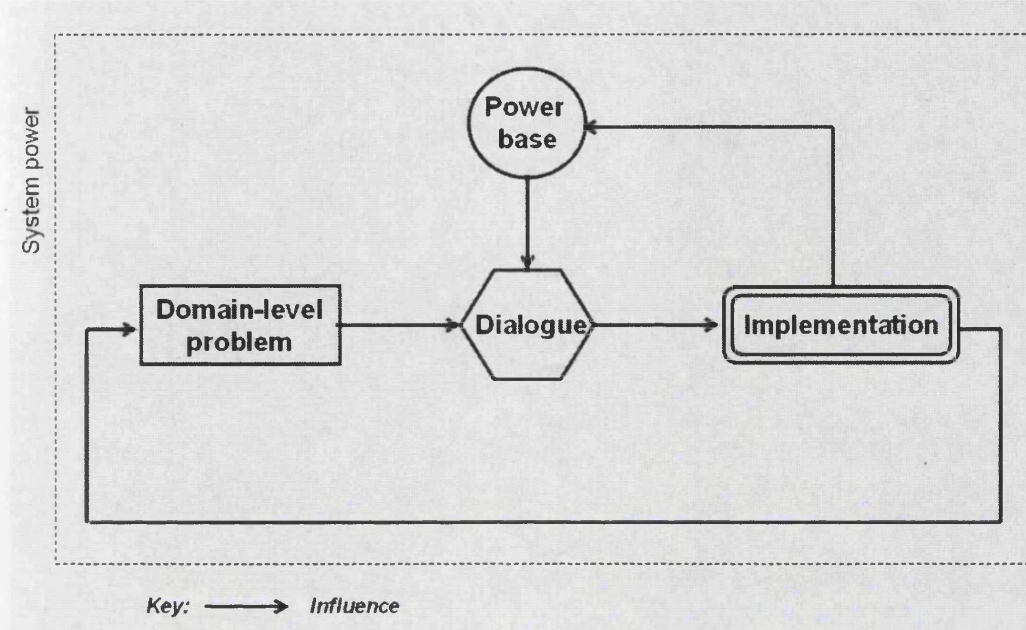
The sub-areas which make up the model are domain, power base, dialogue, and implementation<sup>11</sup>. The interrelations between the different sub-areas which constitute the conceptual model are represented diagrammatically in Figure 3.1. This figure illustrates only the general structure of the model. The sub-areas and the relationships between them require some introductory explanation, in preparation for a more detailed discussion of the elements within them which will be carried out in Section 3.2. In most cases the descriptions of the different sub-areas will consist of summaries of what has already been discussed in the preceding chapters unless specifically indicated otherwise. Throughout the discussion, the sub-areas will be indicated in *italics*.

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<sup>11</sup> Although the focus of this research is on exploring the possible roles for analytical assistance during the problem-setting and direction-setting phases of collaboration (see Chapter 1), we have included in our conceptual model of the collaboration process, for the purpose of completeness, the sub-area 'implementation'.



Figure 3-1: Overview diagram of the conceptual model of a collaboration process



The most fundamental of these sub-areas is the *domain-level problem* since it provides actors with the motivation for engaging in collaboration. As discussed in Chapter 1, actors engage in collaboration because of their perceived inability to address the domain-level problem without involving others. Two simultaneous conditions, it may be recalled, are essential for collaboration to be initiated (Gray, 1989; Logsdon, 1991; Oliver, 1990): (1) actors must have a high stake in the outcome of the collaboration; and (2) actors must perceive a high degree of interdependency with other actors of the domain for dealing with the domain-level problem.

During collaboration, *dialogue* is the means through which actors of a domain address the domain-level problem in order to reach agreements with respect to it. The activities that take place within dialogue are largely analytical. Analysis helps transform the domain-level problem confronted by actors into a defined problem structure with identifiable elements and their interrelations. These analytical activities thus tend to enhance actors' understanding of the domain-level problem they wish to affect.

This improved understanding of the domain-level problem is likely to lead to the development of commitments whose *implementation* is intended to affect the domain-level problem. Prior to implementation, commitments may have to be legitimised first by other actors of the domain.

The effectiveness of the dialogue process will not only be heavily influenced by the particular characteristics of the domain-level problem, but also by the *power base* of the actors engaged in the dialogue. The power base provides the instrumental and symbolic means by which domain actors can achieve desired outcomes in a deliberate and conscious way during dialogue. The power base of domain actors will also influence how the boundaries of the domain-level problems are set before dialogue takes place., as well as who participates in the dialogue (Gray, 1989; Gray & Hay, 1986; Gricar & Brown, 1981; Hardy & Phillips, 1998; Hardy, Phillips, & Lawrence, 1998; McGuire, 1988). However, the power base of actors does not necessarily mean that it will remain static or changeless. The implementation of commitments may alter the power base of domain actors.

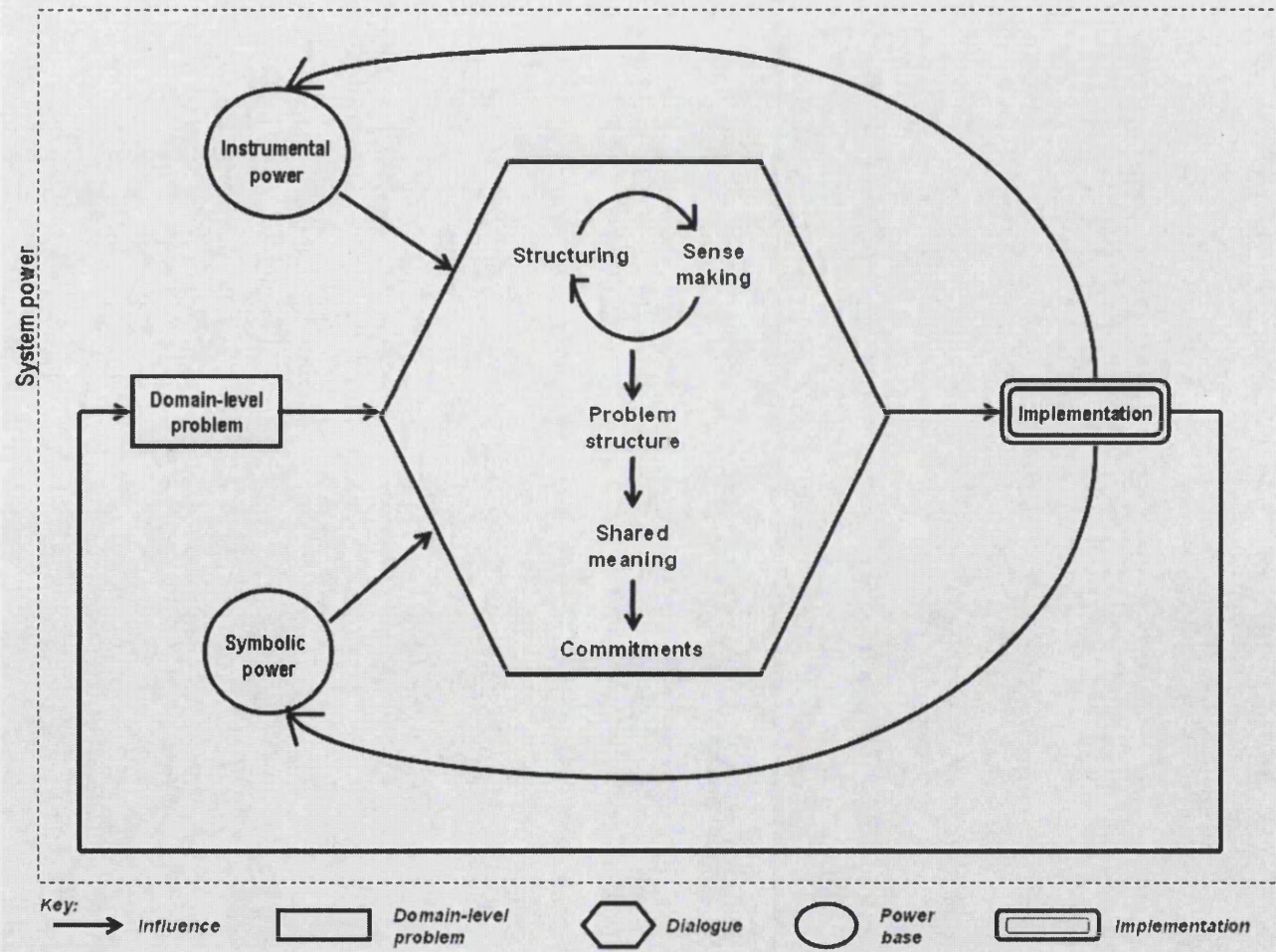
Finally, indicated with a dotted square and labelled 'system power', is the power embedded in the domain system that provides the background against which collaboration takes place. As discussed in Section 2.2.3, the power of the system influences substantive outcomes which may benefit or disbenefit powerful and powerless actors alike, and cannot be controlled by any actor.

So far the level of detail which has been used to describe the model is helpful for explaining the broad relationships between the sub-areas which compose it. However, it does not enable us to make specific statements about how the different sub-areas can contribute to the dialogue process. For this a more detailed description of the elements within the sub-areas, and how they operate in generating shared meaning about a domain-level problem leading to commitments with respect to it, is required. This is discussed in the next section.

### **3.2 Conceptual model of the analytical contribution to collaboration**

The elements involved in the representation of a collaboration process by which actors of and inter-organisational domain can jointly create shared meaning about a domain-level problem, and how these elements relate to one another is shown in more detail in Figure 3.2 below. The elements and their interrelations will be discussed next.

Figure 3-2: Conceptual model of the analytical contribution to collaboration



### *3.2.1 Domain-level problem*

As discussed in Chapter 1, a domain-level problem is that problem area which needs to be resolved by the domain actors, and which gives the domain its identity. Domain-level problems are usually 'ill-structured' and characterised by high levels of complexity, uncertainty, and conflict. Domain-level problems are best viewed as representing a 'problematique' (Quade, 1980) which no single domain actor can solve unilaterally (Aldrich, 1976; Gray, 1989; McCann, 1983; Milward, 1982; Trist, 1983)

### *3.2.2 Power base*

Although actors who engage in collaboration, by definition, do not operate within an overall framework of authority (Alderfer, 1979; Huxham, 1991), there are likely to be asymmetries in the power base of actors for dealing with the domain-level problem (Gray, 1989; Gray & Hay, 1986; Hardy, 1994a; Hardy & Phillips, 1998). This means that those actors who possess more effective power sources will tend to have more influence both over others and over the implementation of actions during the collaboration process.

The power base of domain actors is derived from their access to instrumental and symbolic power sources. Instrumental power is mobilised by domain actors in their attempts to secure substantive outcomes and to influence the domain-level problem despite opposition and conflict. It is based on resource interdependencies (e.g. financial or informational resources, the possession of recognised expertise regarding the domain level problem) and the control of decision-making processes (e.g. the capacity to organise and control the forums in which domain-level problems are addressed) (Gray, 1989; Gray & Hay, 1986). As already discussed in Section 2.2.2, the achievement of substantive outcomes depends upon more than just having these strategic advantages; they also have to be brought into action through a process of power mobilisation.

The successful mobilisation of instrumental power sources by actors will affect the effectiveness of their participation before dialogue (see Section 3.2.4 below). This is because those who successfully mobilise instrumental sources of power (e.g. information, expertise, financial resources) can not only influence who participates in the dialogue but also exercise control over the dialogue agenda (Gray, 1989; Gray & Hay, 1986). In addition, the successful mobilisation of instrumental power by actors after dialogue will ensure that the agreements resulting from it are supported, authorised, vetoed or enacted (see Section 3.2.4 below)..

As in the case of instrumental power, domain actors will attempt to secure outcomes and influence the domain-level problem through the use of symbolic power sources (see Section 2.2.2). Symbolic power can be brought into play through hegemonic sources such as the institutionalisation of power in structural arrangements and cultures, and the ideological hegemony of the wider society (Boggs, 1976; Hardy, 1985; Hyman & Brough, 1975; Lukes, 1974; Pfeffer & Salancik, 1978; Salaman, 1979, 1980). These mechanisms ensure that certain demands and challenges are never made during dialogue and thus favour powerful domain actors at the expense of others. Furthermore, those actors who effectively mobilise symbolic power during dialogue (through the management of meaning (see Section 2.2.1) are more likely to be able to legitimise and justify their desired outcomes, producing post hoc favourable feelings towards them and removing the threat of opposition (Hardy, 1985; Pfeffer, 1981). As a result, the dialogue in which actors participate to address the domain-level problem becomes less balanced which, in turn, affects the quality of dialogue (see Section 2.3.2).

### 3.2.3 *Dialogue*

A key sub-area for this research of the conceptual model of Figure 3.2 is the dialogue in which domain actors participate to gain a broader appreciation of the domain and its stakeholders, create shared meaning about the domain-level

problem, and develop joint agreements with respect to the future of the domain-level problem. As discussed in Chapter 1, actors will only participate in this dialogue if they are perceived as legitimate by other domain actors. The following description of the dialogue process will be made in terms of the activities shown in Figure 3.2 and their associated intermediate products.

The two main activities in which domain actors engage during the dialogue process are: structuring the domain-level problem and making sense of it. *Structuring* is a process of explicitly articulating a framework of the various factors which are perceived to be implicated in the domain-level problem and how they interrelate<sup>12</sup>. This activity can be carried out in a more or less detailed and sophisticated fashion, but it is likely to include some or all of the following: the recognition of patterns of causality; the identification of interdependencies; the generation of potential options for action, and the evaluation of their possible consequences. *Sense making* is fundamentally an individual mental activity which involves the interpretation and understanding of what this articulated framework, and the actions that seem to be suggested by it, mean for an individual in relation to the world in which he/she acts (Eden, 1982; 1986; Weick, 1995).

The structuring and sense making activities operate cyclically as indicated by the loop within the dialogue sub-area in Figure 3.2. As the problem is being structured, individuals participating in the dialogue engage in the sense making of the domain-level problem, and may change their understanding of it; and as changed understanding is achieved, individuals engage in further structuring. Throughout this cycle of structuring and sense making, the opportunity for persuasion (or ‘managing meaning’ – see Section 2.2.1) or negotiation with regards to problem structure will be created (Eden, 1982; 1986). The effectiveness of actors in the persuading or negotiating a particular problem structure will have a significant effect on the commitments which are likely to be achieved during dialogue.

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<sup>12</sup> Whereas individuals may have some implicit structuring of the domain-level problem which is not fully articulated, in this research ‘structuring’ is taken to mean explicit articulating.



Out of the structuring and sense-making activities, a shared problem structure will emerge as an intermediate product of dialogue, leading to shared meaning about the domain-level problem. In order to understand how these intermediate products of dialogue are achieved, a closer examination of the activities embedded within the dialogue process is needed.

Figure 3.3 below shows a model of a dialogue process in which two actors participate. *P* represents the domain-level problem that is perceived by participants 1 and 2. These individual perceptions are mentally constructed by participants 1 and 2 as problem structures *ps1* and *ps2* respectively. Next, participants 1 and 2 verbalise their problem structures during the structuring activity which thereby becomes explicitly expressed as *eps1* and *eps2* respectively.

Figure 3-3: A two-participant dialogue process

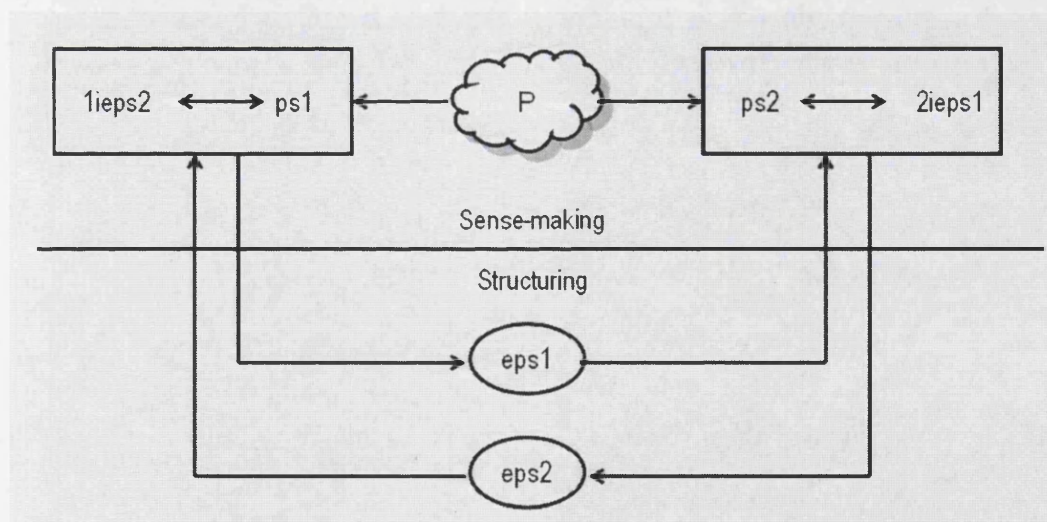
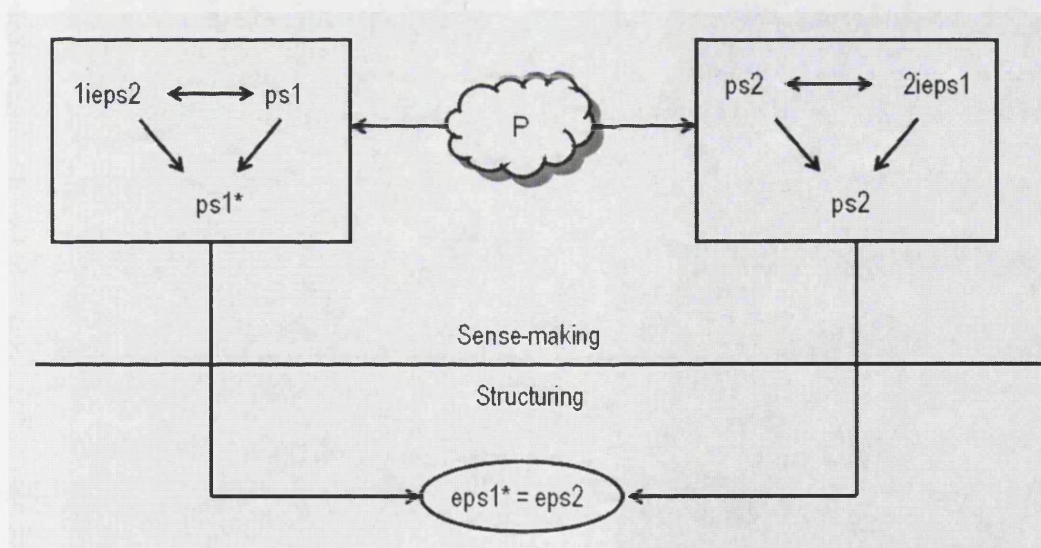


Figure 3.3 also shows how the expressed problem structures are in turn interpreted by each participant: *1ieps2* represents participant 1's interpretation of participant 2's expressed problem structure; likewise, *2ieps1* represents participant 2's interpretation of participant 1's expressed problem structure. These in turn are mentally compared by each individual with their own (mental) problem structures *ps1* and *ps2*.



Two possible outcomes can result from this comparison. First, it is possible that only one of the participants changes his or her understanding of the problem<sup>13</sup>. This means that a ‘cognitive shift’ (Eden, 1992) has taken place. If participant 1 changes his or her understanding of the problem, then a new problem structure ‘ps1\*’ will be explicitly expressed by participant 1 as *eps1\**, which may or may not coincide with that of participant 2 (i.e. *eps2*). If the problem structures are coincident ( $eps1^* = eps2$ ), a shared understanding and shared meaning of the problem will have emerged because participant 2 was successful in persuading participant 1 about the validity of his own problem structure. That is, the problem structure that becomes shared will be that of the persuader. This is showed in Figure 3.4 below.

Figure 3-4: Shared meaning through persuasion

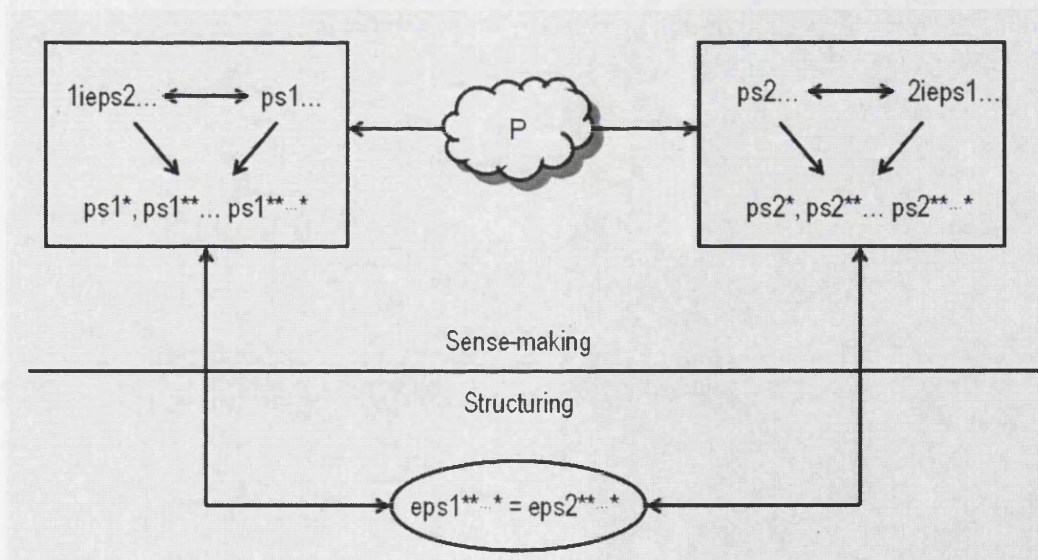


However, if the problem structures are not coincident (i.e.  $eps1^* \neq eps2$ ), participant 1 will use his/her new understanding of the problem to make a further attempt at persuading participant 2 about the legitimacy of his/her own (now changed) problem structure. Similar scenarios will unfold if participant 2, rather than participant 1, changes his/her understanding of the problem.

<sup>13</sup> If none of the participants change their minds about the problem then dialogue will either cease or continue endlessly.

Second, it is possible that both participants change their understanding about the problem<sup>14</sup>. In this case, new problem structures  $ps1^*$  and  $ps2^*$  will be explicitly expressed as  $eps1^*$  and  $eps2^*$  which, again, may or may not be coincident. If the expressed problem structures are coincident ( $eps1^* = eps2^*$ ), a shared structure of the problem, leading to shared meaning, will have been created. On the other hand, if the new problem structures are not coincident, participants 1 and 2 have two choices: they can, as before, use their new problem structures to persuade each other of the legitimacy of their changed problem structures.; or, alternatively, use their new understandings of the problem to negotiate meaning until a shared structure of the problem is developed. In the latter case, shared meaning will have been created because both participants were able mutually accommodate their individual problem structures through negotiation. This is shown in Figure 3.5 below.

Figure 3-5: Shared meaning through negotiation



The activities described above conceptualise most of the important characteristics of a dialogue process in which actors participate to arrive at a shared problem

<sup>14</sup> A changed understanding can occur at any point in time during dialogue. For the purpose of clarity, we are assuming here that both participants change their understandings simultaneously.

structure and shared meaning about the problem, each having their own construal of the problem situation of common interest. As noted earlier, this shared problem structure can be arrived at through either persuasion or negotiation. In the former case, some individuals are able to persuade others of the validity of their particular problem structures through the management of meaning; in the latter case, participants' original problem structures gradually change and individuals' new understandings are gradually accommodated through negotiation to become a shared problem structure.

#### *3.2.4 Implementation*

As discussed in Section 3.2.3, the products of dialogue are a shared problem structure, leading to shared understanding and shared meaning about the domain-level problem. These products of dialogue, if effectively used, will lead to commitments by actors to a proposed set of actions regarding the domain-level problem.

Not uncommonly participants in the dialogue are likely to have different degrees of accountability to outside interests. This means that actors may first have to engage in the legitimization of their commitments within their own organisational constituencies before actual implementation takes place. This is because the actual implementation of actions will depend on the extent to which the actors participating in the dialogue are empowered to execute realise the commitments agreed during dialogue (Friend, 1990, 1993; Friend & Hickling, 1997). Furthermore, this legitimization process will require actors working as competent 'boundary spanners'<sup>15</sup> (Adams, 1976; Hosking & Morely, 1991; Trist, 1983; Williams, 2002).

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<sup>15</sup> A boundary spanner is an agent who is responsible for contacting people outside his or her own group. The boundary spanner conveys influence between actors as well as represents their perceptions, expectations, and ideas (Adams, 1976; Aldrich & Herker, 1977). A competent boundary spanner has reticulist skills (Degeling, 1995; Friend, 1993; Friend, Power, & Yewlett, 1974; Webb, 1991), including networking, communication, and political skills, and an appreciation of the interdependencies around the structure of problems and the feasibility of their implementation.

The legitimization process can result in straightforward legitimated actions ready to be implemented. In this case, implementation involves actors taking steps to ensure that the proposed set of actions reached during dialogue is effectively carried out. The actual effectiveness of implementation will depend then on how instrumental power is mobilised by actors after dialogue. As indicated in Section 2.2.2, it is not sufficient to possess these power sources: it is also necessary to use them effectively<sup>16</sup>.

It is also possible that the legitimization process results in a set of modified proposals which then may require actors to engage in a new dialogue process, which may in turn result in a new set of commitments which will be subject to a new process of legitimization.

The actual implementation of actions may in turn increase or reduce the instrumental and symbolic power sources of the domain actors participating in the dialogue<sup>17</sup>. Most importantly perhaps, the implementation of actions will affect the domain-level problem. One possibility is that the domain-level problem is alleviated and thus the need for further dialogue is reduced. More commonly, the nature of the domain-level problem may change to the extent that its treatment requires further collaboration and thus dialogue. In the latter case, the engagement of domain actors in sustained collaborative activity is likely to facilitate the sequential development of an inter-organisational domain as a temporary negotiated order (see Chapter 1).

The collaboration process has been described in this chapter in terms of domain, power base, dialogue, and implementation. As stated earlier, the concern of this thesis is with exploring whether the provision of analytical assistance is potentially valuable in helping domain actors create shared meaning about the domain-level problem and reach agreements with respect to it. The element in the

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<sup>16</sup> As noted earlier, this is more likely to happen when domain actors are competent 'boundary spanners'.

<sup>17</sup> The implementation of actions by domain actors certainly has the capability to affect the 'power of the system' (see Section 2.2.3) but not in specific ways that can necessarily be predicted.

model in which analytical assistance potentially has a significant role to play is dialogue.

We contend that the presence or absence of analytical assistance might be expected to make a difference to the effectiveness of the dialogue process. Within the operational research field, there are many kinds of analytical assistance available<sup>18</sup>, but the kind of analytical assistance which this research is concerned with is that provided by PSMs. We are investigating in this thesis the extent to which PSMs are potentially valuable in assisting domain actors who engage in a collaboration process, and thus dialogue, as a means to address a domain-level problem and reach agreements with respect to it. As we have seen, dialogue essentially involves actors engaging in a cycle of structuring a domain-level problem and making sense of it, and which involves persuasion or negotiation, all with a view to generating shared meaning about the problem, and developing joint agreements with respect to it.

In the next chapter, we will explore how PSMs can assist actors achieve the intended products of dialogue through the facilitation of negotiation, rather than persuasion, between actors participating in the dialogue.

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<sup>18</sup>These may include, for example, data envelopment analysis, forecasting, simulation, system dynamics, and mathematical programming. In this thesis we are concerned with participatory model-based types of analytical assistance.

## **4 Problem structuring methods for collaboration**

The purpose of this chapter is to clarify the potential distinctive role of PSMs in assisting actors of a domain who engage a collaboration process to address a problematic situation of common interest, and reach joint agreements with respect to it. PSMs have widely demonstrated their ability to be useful with actors working within single organisations (see, for example, Mingers & Rosenhead, 2004). By contrast the accounts of their use with actors engaged in inter-organisational collaboration are still limited. This chapter focuses on identifying what if anything is the distinctive potential role for PSMs in a collaboration process.

The chapter is structured as follows. Section 4.1 presents the general characteristics of the family of PSMs, some of the claims which have been made for them, and a survey of the evidence which appears to support these claims. This discussion will focus particularly on what has been written about PSMs in relation to their use with single-organisational groups. Section 4.2 then discusses the extent to which PSMs can be useful in assisting a process of domain-level collaboration. In particular, the potential distinctive role of PSMs in helping actors achieve the intended products of dialogue (and thus collaboration) will be discussed. This discussion will make use of the concepts and conceptual model developed in Chapters 2 and 3.

### **4.1 The characteristics of Problem Structuring Methods**

The following discussion is principally based on the influential work of Rosenhead (1989; 1996), recently updated by Rosenhead and Mingers (2001), who provides a thorough review of the characteristics of PSMs.



Although the origins of operational research (OR) can be traced back to the late 1930s and early 1940s, a period during which it made a significant contribution to the allied war effort (Kirby & Capey, 1997, 1997), it was not until the 1960s and after that OR gained widespread acceptance in academic, scientific, industry and civil government circles (Kirby, 2000, 2000; Kirby & Capey, 1998). The reason for this acceptance and its timing can be explained by the dramatic changes in industrial structure that took place during the course of the post-war years both in Britain and in the US, which gave OR the opportunity to demonstrate the usefulness of its scientific-based modelling techniques in providing decision support for the management of large-scale systems (Channon, 1973; Hannah, 1983; Radnor & Neal, 1973).

During the 1970s and 1980s, OR as a discipline came under severe criticism partly because of its unsatisfied ambitions to address problems of strategic importance, and partly because of its perceived inability to tackle social issues and 'human activity systems' (Ackoff, 1974, 1975, 1979, 1979; Checkland, 1981; Chesterton et al., 1975; Dando & Bennett, 1981; Dando & Sharp, 1978). Furthermore, traditional 'hard' OR, whose methods consisted largely of algorithmic and optimising techniques, was perceived to offer limited capability for dealing with problem situations characterised by 'swamp' conditions<sup>19, 20</sup> (Rosenhead, 1989; Rosenhead, 1992; Rosenhead & Mingers, 2001; Schon, 1987). That is, conditions characterised by the presence of a plurality of semi-autonomous actors with multiple perspectives and partially conflicting interests; significant intangibles, and high levels of uncertainty (about options, the actions

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<sup>19</sup> A relevant case which provided empirical evidence of the limitations of traditional hard OR methods for dealing with swamp conditions is described in Greenberger *et al* (1976). These authors analysed the work of the RAND Corporation with the New York City government, which addressed urban problems such as those concerning the city's fire and public health services.

<sup>20</sup> Some scholars have attempted to categorise problem contexts to assist in determining the appropriate type of OR/Systems methods (e.g. hard or soft) which could be used for organisational problem solving. An example is the widely taken up 'system of system methodologies' (SOSM) elaborated by Jackson and Keys (1984). The SOSM framework is based on two dimensions of problem situations. One dimension is concerned with how complex the problem context is (from 'simple' to 'complex'); the second relates to the relations between stakeholders, with the alternative possibilities of 'unitary' (i.e. general agreement) or 'pluralist' (differing but reconcilable views). Jackson and Keys (1984) argue that only the simple-unitary problem situation is suitable for the application of traditional hard OR methods. This framework has been subsequently elaborated by Jackson (1987; 1988; 1988)

of others, and their likely consequences). Other labels attributed to this type of problem situations are 'messy' (Ackoff, 1974, 1981) and 'wicked' (Rittel & Webber, 1973).

This period of perceived 'crisis' in OR gave rise directly to propositions for an alternative way of providing model-based decision support (Ackoff, 1987; Checkland, 1981, 1983, 1985; Eden, 1982; Eden, 1986; Eden, Jones, & Sims, 1983; Flood & Jackson, 1991; Friend, 1993; Friend & Hickling, 1987; Jackson, 1987; Jackson & Keys, 1984; Keys, 1984; Mingers, 1992; Rosenhead, 1986; Rosenhead & Thunhurst, 1982). As a result, a range of novel methods which collectively became known as 'soft OR', or alternatively as problem structuring methods' (PSMs)<sup>21, 22, 23</sup>, were developed. (Ackoff, 1974; Checkland, 1981; e.g. Churchman, 1971)

Unlike PSMs, hard OR assumes, explicitly or implicitly, a single-decision maker, who has a clearly defined objective (or, if multiple objectives are established, is able to identify trade-offs between them) and whose interest is to find an optimal solution. However, it has been argued that the existence of multiple perspectives renders the search for an optimum irrelevant and misleading, for actors will need to interact and negotiate their multiple perspectives in order to reach agreements (Rosenhead, 1996; Rosenhead & Mingers, 2001).

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<sup>21</sup> Although the 'soft' systems approaches were being developed throughout the 1970s and 1980s (Ackoff, 1974; Checkland, 1981; e.g. Churchman, 1971), the notion of 'soft OR' did not emerge until the systems conferences organised by the British OR Society in 1983 and 1985, which led to the special issues of the Journal of the Operational Research Society of August 1983 and September 1985. The development of some PSMs, however, can be traced back to as early as the 1960s (Friend & Jessop, 1969; e.g. Luckman, 1967). The publication in 1989 of Rosenhead's edited *Rational Analysis for a Problematic World* gave PSMs their definite identity and their recognition as a coherent field within OR.

<sup>22</sup> Several comparative analyses of hard and soft OR approaches can be found in the literature. Among the multiple frameworks developed to the study of these approaches we can cite those of: Flood and Jackson (1991) and Jackson (2000), both of which concentrate on system-based methods only; and Mingers and Gill (1997), who present a multi-methodology framework within which hard and soft OR approaches can be combined together in a single intervention.

<sup>23</sup> A more recent development, which has further expanded the OR and Systems disciplines, is 'Critical OR/Systems'. Approaches within Critical OR/Systems aim at providing support for actors to raise, explore and critique the normative implications of organisational policies, plans and designs – for extensive descriptions of critical OR/Systems thinking and methods see Flood and Jackson (1991), Mingers (1992; 1997), and Jackson (2000; 2001).



Evidently, decision making under complexity and uncertainty is very difficult. Hard OR developed a model-based approach to handle situations characterised by complexity. Uncertainty was then commonly handled by incorporating into these models probabilities regarding the values of different factors. Rosenhead (1996) argues that the unambiguous specificities and complex mathematical formulations contained in these models renders the analysis and model results incomprehensible for most participants, significantly affecting their confidence to make decisions. As a result, methods different from those available in hard OR were thought to be needed (Rosenhead, 1996; Rosenhead & Mingers, 2001).

Thus, PSMs were developed to make an appropriate form of decision support, which was already available to problems with relatively low levels of uncertainty and conflict, and high levels of complexity, available in problematic situations with high levels of uncertainty and conflict. And indeed the high levels of uncertainty and conflict themselves give rise to complexity of a different nature. PSMs took from its hard OR origins the model-based approach to enable actors to structure and thereby handle the problem situations they face more easily.

PSMs are a family of decision-aiding approaches which are intended for use with groups. The key word in problem structuring methods is 'structuring'. Within the PSM field, structuring is used in the sense of identifying concepts and activities which are relevant to the problem situation, of clarifying the relationships between them; and of focusing on key areas and excluding others, at least temporarily. Some PSMs also generate and evaluate alternative options. It can be observed that this notion of structuring is very similar to our definition of the dialogic structuring activity elaborated in Section 3.4 in its emphasis on generating changed understandings of the problem situation by and between participants, so that they can reach agreement both on the nature of their shared problem and on commitments which will address it (Rosenhead, 1996; Rosenhead & Mingers, 2001).

Rosenhead and Mingers (2001) recognise five major PSMs: Strategic Development Option and Analysis (SODA) (Eden & Ackermann, 1998; Eden, Jones, & Sims, 1983), Soft Systems Methodology (SSM) (Checkland, 1981; Checkland & Scholes, 1990), Strategic Choice Approach (Friend & Hickling, 1997), Robustness Analysis (Rosenhead, 1980, 1980; Wong & Rosenhead, 2000) and Drama Theory<sup>24</sup> (Bennett & Howard, 1996; Howard, 1999; Howard et al., 1993)<sup>25</sup>.

The major PSMs are listed in Table 4.1 with accompanying focus, modelling approach and general purpose. More detailed presentations of these methods can be found in Rosenhead and Mingers (2001).

The research and practice of PSMs have been located mainly in Northern Europe, and specially the United Kingdom. There are active PSM research groups at LSE, Lancaster, Warwick, Strathclyde, and Hull in the United Kingdom; and at Delft, Nijmegen, Utrecht and Tilburg in the Netherlands. Beyond academia, PSMs have been applied in a wide variety of areas including health (Hindle et al., 1995; Lartindrake & Curran, 1996; Wells, 1995); transport (Khisty, 1995; Ulengin & Topcu, 1997); natural resources (Brown & MacLeod, 1996; Fielden & Jacques, 1998; Gough & Ward, 1996); manufacturing (Ackermann, 1997; Williams, Ackermann, & Eden, 2003); and information systems (Ormerod, 1995, 1996, 1998). For a recent review of PSM application areas see Mingers and Rosenhead (2004).

Some PSMs have been further developed by their originators: SODA has evolved into a strategic development methodology (known as 'Journey Making') (Eden &

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<sup>24</sup> Drama Theory draws on two earlier approaches: Metagames (Howard, 1977, 1987) and Hypergames (Bennett, Cropper, & Huxham, 1989; Bennett & Huxham, 1982)

<sup>25</sup> According to Rosenhead and Mingers (2001), other methods with some currency that have at least certain family resemblances with PSMs include: Strategic Assumptions Surfacing and Testing (SAST) (Mason & Mitroff, 1981); Interactive Planning (Ackoff, 1999); and Critical Systems Heuristics (Ulrich, 1983). Other related methods which are particularly close to the spirit of PSMs in at least some of their modes of use, and which are also treated in Rosenhead and Mingers (2001), are: Viable Systems Model (VSM) (Beer, 1985; Espejo & Harden, 1989); System Dynamics (SD) (Lane, 2000; Vennix, 1996); and Decision Conferencing (Phillips, 1989; Watson & Buede, 1987)

Ackermann, 1998); SSM has become a widely used information systems development methodology (Checkland & Holwell, 1998; Stowell, 1995); Strategic Choice has extended its scope of applications into the management of international development projects (Friend, 1997); and Drama Theory has recently been proposed as tool to support inter-organisational collaboration (Bryant, 2003).

**Table 4-1: Major Problem Structuring Methods**  
**- based on Rosenhead (1996) and Rosenhead and Mingers (2001)**

Name	Focus	Purpose	Modelling
Strategic Options Development and Analysis (SODA)	Representation of individuals' perceptions of a situation in their own language.	Develop shared understanding of the problem situation leading to commitment to consequential actions.	Psychological constructs and their interrelations captured through cognitive/cause mapping and analysed with special purpose software.
Soft Systems Methodology (SSM)	Exploration of different worldviews relevant to a situation and contrast their implications in a process of debate.	Learn about and improve a problematic situation by gaining agreement on feasible and desirable changes.	Models of 'ideal' human activity systems developed through the use of rich pictures, root definitions and systems models.
Strategic Choice Approach (SCA)	Recognition of key uncertainties influencing a set of interconnected choices, and the management of commitments.	Make incremental progress by committing to a set of priority decisions, explorations and contingency plans.	Decision graphs and option graphs are used to develop a feasible set of interconnected options, which are then evaluated against a set of comparison areas which bring key uncertainties to the surface.
Robustness Analysis	Exploration of the compatibility of alternative initial commitments with possible future configurations of a system being planned for.	Secure flexibility of initial commitments in terms of acceptable options left open.	Models are used to determine which possible system configurations perform acceptably in particular futures. Matrices capture the relative accessibility of acceptable configurations from alternative initial decisions.
Drama Theory	Representation of a conflictive situation involving different players and their interacting decisions.	Clarify the competitive structure of a situation and identify possibilities for cooperation, and scenarios which will be stable.	A set of players, their options and possible strategies are captured by developing a 'card table' and exploring the stability of solutions by analysing the different potential dilemmas faced by the players.

Before we clarify the potential role that PSMs may play in the collaboration process, a more detailed characterisation of the processes of applying PSMs, their available technology, and their intended products is needed. The general characteristics of PSMs, are listed in Table 4.2 below.

**Table 4-2: PSM process, technology and products**  
**- based on Rosenhead (1996) and Rosenhead and Mingers (2001)**

Process
Group-based. Facilitated. Participative. Interactive. Iterative. Adaptable. Phased. Non-linear. Combinable with other hard and soft methods.
Technology
Model-based. Requisite. Diagrammatic/language-based. Reduced quantitative data requirements. Transparent/accessible. Low technology. Analysis of cause and effect relationships. Analysis of significant discrete options. Handling of uncertainties.
Products
Problem structure. Increased understanding. Accommodations of multiple positions and in power relations. Ownership of problem structure and of consequence of planned actions. Partial commitments. Learning.

The characteristics listed in Table 4.2 above are those which have been claimed for PSMs by numerous scholars in relation to their use with single organisational groups (e.g. Ackermann, 1996; Ackermann & Eden, 1994; Bryant, 1989; Checkland, 1981; Checkland & Scholes, 1990; Eden, 1992, 1995; Eden &

Ackermann, 2004; Eden, Jones, & Sims, 1983; Eden & Radford, 1990; Friend, 1990; Friend & Hickling, 1987, 1997; Phillips, 1984, 1989; Phillips & Phillips, 1993; Rosenhead, 1989; Rosenhead, 1996; Rosenhead & Mingers, 2001). In the discussion that follows in the next three sections, the characteristics will appear in *italics*.

#### 4.1.1 PSM processes

The orientation of PSMs, as Rosenhead and Mingers (2001) point out, is to aid *groups* in agreeing the nature of a problem situation they face so that progress can be made. This is because in an environment characterised by swamp conditions, there is a plurality of actors with different interests who will need to engage in dialogue if the problems they face are to be resolved by means other than an exercise of power or open conflict (Rosenhead, 1996)

Consequently, when group members participate in a PSM process, they use dialogue to exchange their understandings and views about the problem situation which is being structured. The PSM process is therefore claimed to be *participative* in the sense that group members are able to jointly construct the problem situation, make sense of it, arrive at a shared problem definition, and develop a portfolio of options relevant to the problem so defined (Rosenhead & Mingers, 2001). This participatory process is *facilitated* by external professionals (Ackermann, 1996; Phillips & Phillips, 1993).

It has been argued that the PSM process is *interactive* (Rosenhead, 1996; Rosenhead & Mingers, 2001), because it requires interaction both in the sense that it requires interaction between participants, and in the sense that they interact with the analysis. This latter interaction reshapes the analysis, and the analysis reshapes the discussion. The PSM process is also thought to be *iterative* (Rosenhead, 1996; Rosenhead & Mingers, 2001), because the process is repeated until the problem situation is satisfactorily structured so that the group feels sufficiently confident in making commitments.

Built into the different PSMs are features whose purpose is to enable participants to 'distance themselves from previous bindings during the PSM process, effectively providing them with a certain degree of ambiguity or 'equivocality' regarding their own positions (Eden, 1992; Eden & Ackermann, 1998; Eden & Ackermann, 2004). This, it is argued, allows participants to change their positions in response to what they have learned about the problem situation without destroying the social order in the group (Eden, 1992). Changing positions imply individuals 'changing their minds', i.e. changed beliefs, changed values and changes in the salience of particular issues or values (Eden, 1986). The consequence of this *adaptability* is that it becomes easier for participants to reconcile the position they eventually take both with principles and with past words and actions during dialogue.

Most PSMs are organised into stages or modes and thus are *phased*. For example, SODA is presented as a two-phase divergent-convergent approach (Ackermann & Eden, 1994); SCA is organised around four modes, namely, shaping, designing, comparing and choosing (Friend, 2001; Friend & Hickling, 1997); and SSM was originally conceived as a seven-phase methodology<sup>26</sup> (Checkland, 1981; Checkland & Scholes, 1990). This 'phased-ness' makes it possible for the users of the method to conclude without passing through all the modes that compose it, and still have a visible product which can be of use to them (see Section 4.2 below).

Furthermore, the phases of the different PSMs do not have to be followed in a linear sequence. Instead, PSMs tend to operate in a *non-linear* fashion which makes it possible for the participants to cycle between the phases. As Eden (1986; 1992).argues, the characteristic non-linearity of the PSM process is a direct

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<sup>26</sup> The original seven-phase methodology advocated by SSM was: enter the situation considered problematic; express the problem situation; formulate root definitions of relevant purposeful systems; build conceptual models of the systems named in the root definitions; compare models with real-world actions, define possible desirable and feasible changes; and, take action. However, Checkland himself no longer favours this original conceptualisation, as it conveys a mechanistic flavour. Instead, he prefers to represent SSM as a learning cycle with no prescriptive phases (Checkland, 1999).

consequence of acknowledging that participants in a group decision making process will consider the practicality of possible actions at the same time as the problem is formulated.

Thus far we have looked at the characteristics of the PSM process. As we have seen, proponents of PSMs promote that their methods offer flexibility in their application and can be responsive to the dynamics of group work and/or the particularities of the problem situation at hand (Rosenhead, 1996; Rosenhead & Mingers, 2001). In practice, this flexibility has allowed the possibility of their combined use, as well as of their use in combination with hard OR methods (Bennett, 1985; Flood & Jackson, 1991; Jackson & Keys, 1984; Mingers & Gill, 1997; Rosenhead & Mingers, 2001).

#### 4.1.2 PSM technology

The technology available with PSMs is *model-based*. Modelling is the defining characteristic of these methods which gives them their unambiguous OR identity. This distinguishes them, for example, from non-OR modes of group working such as organisational development (Beckhard, 1969; Eden, 1978). As Eden (1986; 1988) argues, PSM models provide actors with a 'facilitative device' which can be used to increase their multiple understandings of the problem situation, and negotiate future courses of action .

The type of models built with PSMs are said to be *requisite* (Phillips, 1984). This means that they contain sufficient knowledge and information to help participants find a way forward. Furthermore, PSM models are expressed in visual, *diagrammatical form*, and mostly use participants' own *language* rather than mathematics or quantitative data to represent the problem. PSM proponents argue that only language has the degree of richness and transparency suitable for the modelling of complex problems (Checkland, 1981; Eden, Jones, & Sims, 1983; Rosenhead, 1996; Rosenhead & Mingers, 2001). These models are thus characterised by *reduced quantitative data requirements*. Among the numerous



examples of PSM models are: cognitive maps in SODA; 'rich pictures' in SSM; decision graphs in SCA; and card tables in Drama Theory (see Table 4.1).

It has been claimed that diagrammatical methods are of particular value in representing complexity to lay audiences who might otherwise find traditional operational research means of handling complexity opaque (Eden & Ackermann, 2004; Rosenhead, 1996; Rosenhead & Mingers, 2001). In PSM models there is supposed to be nothing hidden, which makes them *transparent* (i.e. easy to understand) and *accessible* (i.e. simple to use).

Indeed, these attributes of transparency and accessibility have made it possible for some PSM scholars to promote PSMs as *low technology* approaches (e.g. Friend & Hickling, 1997). This characteristic is aptly expressed in the settings and tools used for building PSM models: a room spacious enough for participants to move around freely and with movable chairs laid out in a horse-shoe fashion; large sheets of paper attached around the walls of the room; a simple, non-permanent means of sticking papers to these walls; and a good supply of marker pens with contrasting colours are all that is usually needed for a PSM modelling session (Eden, 1990; Friend & Hickling, 1997; Hickling, 1990; Huxham, 1990). This suggests that PSM modelling is technically a relatively unsophisticated activity conducted in a workshop format, and one which does not necessarily require software to support it (Ackermann & Eden, 1994). Some PSMs do, however, use software to support their modelling processes (Ackermann, 1990; Ackermann & Eden, 1994; Ackermann & Eden, 2001; Eden, 1992; Eden & Radford, 1990; Phillips, 1989)<sup>27</sup>.

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<sup>27</sup> In the group decision and negotiation field, PSMs are also commonly known as Group Decision Support Systems (GDSSs) (Ackermann & Eden, 1994; 2001; Eden, 1992). Two modes of GDSS operation can be distinguished depending on whether the system is exclusively computer supported or not. One level corresponds to those computer-supported systems involving direct keyboard entry from the members of the group. This type of system is commonly known as a *technology driven* system (Morton, Ackermann, & Belton, 2003; Pervan & Atkinson, 1995; Stevens & Finlay, 1996), and is defined as a set of software components, hardware components, language components, and procedures, which aims to improve the productivity of group meetings by removing common communications barriers through systematically directing the pattern, timing or content of dialogue between group members (DeSanctis & Gallupe, 1987; Huber, 1984). Another mode of operation corresponds to those facilitator driven systems that may or may not be computer supported. These GDSSs, also known as *model-driven* or '*wide-band*' approaches

Models in PSMs are used to graphically represent, among other things, relationships between concepts, activities or stakeholders, relationships of similarity or influence, and relationships between options. Especially significant is the modelling of *cause and effect relationships* through which the different elements that make up the problem situation are identified. By modelling cause and effect relationships, PSM models are thought to help participants to 'look beneath the surface' to establish problem structure.

As Rosenhead and Mingers (2001) point out, the purpose of PSMs is not to identify a single optimal solution. This means that the entire 'solution space' is in principle of interest during the PSM modelling activity (Rosenhead, 1996; Rosenhead & Mingers, 2001). However, because the set of all possible solutions would be unmanageable large, PSM models limit their scope at any time to a set of *discrete 'solutions' or options* for action selected using different screening procedures (e.g. by filtering out internal incompatibilities between options or eliminating them through dominance; by using thresholds of acceptable performance; by bundling into coherent packages representing contrasting priorities, etc.) (Rosenhead & Mingers, 2001). By concentrating on a few significant discrete options (which may change during the analysis), PSMs models seek to help participants to handle the systemic complexity of their problem situation.

Some PSMs also offer explicit means of *handling uncertainties* by translating them into elements in the decision process. In hard OR models, the uncertainty about future values of some factor of interest is typically handled by deriving a

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(Ackermann & Eden, 1994; Eden, 1992; Morton, Ackermann, & Belton, 2003), aim to provide effective group problem solving by building models of the problematic situation of common interest, and which may or may not involve real time computing as part of the group activity (Ackermann & Eden, 1994; Eden, 1992). SODA, for example, is able to operate either with or without computers. In the former case, SODA uses of a computer-supported system called *Group Explorer* that allows group participants to enter their views relating to a problem directly and anonymously into it. The system is then operated by the facilitator who manipulates and analyses the data according to the wishes of the group. Once a model of the problem is built and stored in the system, several analyses can be performed 'on-the-hoof' by the facilitator with the aid of a special purpose software called *Decision Explorer* (Ackermann & Eden, 2001)

probability distribution across its possible values. By contrast, PSM models focus on the ‘possibility’ and implications of an uncertain event deemed to be important enough by the group to enter their deliberations (Rosenhead & Mingers, 2001). For example, Robustness Analysis uses ‘scenarios’ as a way to handle uncertainties and explore alternative possible futures<sup>28</sup> (Rosenhead, 2001); SCA provides methods to identify what the uncertainties are (about the environment, about values, about related agendas), and to establish exploratory actions aimed at managing them (Friend, 2001; Friend & Hickling, 2005).

Several products have been claimed to be the result of the use by groups of PSMs processes and technology. The intended products of PSMs are discussed in the following section.

#### 4.1.3 PSM products

In this section, a number of PSM products which have been claimed to be the result of PSM interventions will be discussed. Some of these products will be tangible outcomes of the PSM process, whilst others will be less visible but valuable in their own right (Friend & Hickling, 2005).

The most visible PSM product is obviously the model built during the PSM process and which contains the *problem structure*. The PSM model acts as a ‘transitional object’ (de Geus, 1988) or ‘negotiative device’ (Eden, 1988), and is thought to facilitate the achievement of a number of invisible products. First, it is argued that by allowing the mutual exploration of the problem structure as portrayed by the model, PSMs enable the *accommodation of multiple and differing positions* (Checkland, 1981; 1996; 2001). The argument is based on the notion that situations characterised by complexity, uncertainty and conflict will commonly require participants to adjust their positions and/or expectations to take into consideration the possible objectives and strategies of others (Rosenhead,

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<sup>28</sup> Scenarios are coherent but different stories of the future which can be used to stimulate discussion between participants about ‘threats and opportunities’ of the environment which they do not control (Schoemaker, 1995; Van der Heijden, 1996; Wack, 1985).

1996; Rosenhead & Mingers, 2001). Accommodations between actors may also require coalition forming (Eden, 1986, 1996; Eden & Ackerman, 2001), which may produce a *shift in power relations* during the PSM process (Eden, 1992).

Second, the analysis of cause and effects relationships embedded in the PSM model is thought to give participants an *increased understanding* of the problem situation, of organisational processes and cultures, and of others' beliefs and values. Such increased understanding is taken to be conducive to *learning* (Checkland, 1981, 1999; Eden & Ackermann, 1998; Friend & Hickling, 1997). Third, it is argued that actors' active participation in the analysis and modelling process (see Section 4.1.1) produces strong *ownership* of the problem formulation, and of the actions to be taken, as well as acceptance of responsibility for the consequences of the actions taken (Rosenhead, 1996; Rosenhead & Mingers, 2001).

A visible PSM product which, it is argued, results from the accommodations, increased understanding, and ownership achieved during the PSM process takes the form of a set of *partial commitments*, and which are usually expressed as an action plan or 'commitment package' (Friend & Hickling, 2005). Action plans can contain a mix of espoused or recommended decisions, policies or research explorations, and may or may not include supporting argumentation derived from the PSM model. The development of partial commitments is based on the notion that the only way to make progress in swamp conditions is by adopting an incremental approach and thus working on a less comprehensive solution<sup>29</sup> (Eden & Ackermann, 1998; Friend, 2001; Rosenhead & Mingers, 2001).

What have been described in the preceding sections are the typical characteristics of the family of PSMs as a whole, though individual methods may vary with respect to these in certain respects. Most of what has been reported about PSMs has focused on actors working within single organisations. It is not clear, however, how well these experiences will transfer to actors working

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<sup>29</sup> This touches on the debate between rational comprehensive planning, disjointed incrementalism, and mixed scanning (Etzioni, 1968; Faludi, 1973; Lindblom, 1979).

collaboratively between and across organisations. We have argued in Chapter 1 that the contextual characteristics of domain-level problems broadly correspond to those for which PSMs were specifically designed. Indeed, published studies on the use of PSMs with collaborative groups are increasing (Bryant, 2003; Eden, 1996; Eden & Huxham, 2001; Franco, Cushman, & Rosenhead, 2004; Huxham, 1991; Huxham, 1996; Taket & White, 2000). However, no theoretical arguments justifying the appropriateness of PSMs in this context have been advanced so far. What is lacking in these studies is a theoretical framework or conceptual model of the kind developed in Chapter 3, which can be used to explore the potential role that PSMs can play in assisting actors working in a collaboration context and as a means to evaluate their effectiveness.

In the following section, we will use the model developed in Chapter 3 to discuss the extent to which PSMs can aspire to play a significant role in assisting such groups.

#### **4.2 The potential role of PSMs in collaboration**

It is argued here that the potential role for PSMs in a collaboration process is principally in relation to the dialogue sub-area of the conceptual model developed in Chapter 3. As already discussed in Section 3.2, the key activities which take place within the dialogue sub-area essentially concern actors engaged in a cycle of structuring a domain-level problem, and making sense of it. From our preceding discussion of PSMs, it has been observed that one of their characteristic features is the development of a model representing alternative versions of the problematic situation of common interest. The purpose of the modelling process is to help actors both structure that situation and make sense of it. Provided that the modelling process is successfully conducted, it can be argued that PSMs will in effect be contributing to the structuring and sense making activities of the dialogue in which domain actors participate.

The products of dialogue, it may be recalled, are a problem structure leading to shared meaning about the domain-level problem, all with a view to developing joint agreements with respect to it. As already discussed in Section 4.1.3, a key visible product claimed for PSMs is also a problem structure that becomes shared between those participating in the modelling process, and which is thought to lead to increased understanding. Rationales for PSMs have not included any role for the concept of shared meaning. Nevertheless, it can be argued that the claims that have been made for PSMs do imply the creation of shared meaning as an intermediate step to the achievement of other PSM products such as ownership of the problem structure and the development of partial commitments (see Section 4.3.1) Thus, in principle, the achievement of PSM products presupposes the realisation of the products of dialogue.

It was noted in Section 3.2.4 that actors' commitments resulting from their participation in dialogue will be affected by whether the collaborators engage in persuasion or negotiation to attain them. In the former case, the process of shared meaning creation is controlled by one party, which is more likely to occur when that party is able to effectively mobilise symbolic power sources (see Section 2.2.2 and Section 3.3.) to its benefit. Under these circumstances, we diverge from the ideal speech situation (ISS) and dialogue becomes unbalanced (see Section 2.3.2), thus affecting its quality. By contrast, when the process of creating shared meaning is not controlled by any one party then the situation more nearly approximates the ISS, and hence the quality of dialogue is improved. The question is, to what extent are PSMs able to improve the quality of dialogue in which domain actors participate to address a domain-level problem?

As may be recalled from Section 2.3.2, four criteria have to be met to ensure that the communicative exchanges between participants in a dialogue are free from distortions and conducive to mutual understanding (Forester, 1989, p. 36):

- Are the exchanges comprehensible?
- Are the exchanges sincere or trustworthy?

- Are the exchanges legitimate?
- Are the exchanges accurate or truthful?

Failure to meet the above criteria is likely to affect the quality of dialogue in which domain actors participate. These criteria are based on Habermas' (1984) theory of communicative action, and it is worthwhile exploring what their implication are for our analysis of dialogue.

With regards to *comprehensibility*, the function of the PSM model is to provoke communicative exchanges between participants, and the PSM process is designed to reveal or clarify the meaning of these exchanges through dialogue. Participants' own language is used to develop PSM models (Checkland, 1999; Eden & Ackermann, 2004; Rosenhead & Mingers, 2001), and their contributions to the model are constantly checked and clarified by themselves or the PSM facilitator, which reduces the scope for ambiguity and confusion during the modelling process. Therefore, it would seem that PSMs can in principle contribute to the avoidance of potential misunderstandings between domain actors participating in a dialogue, thus increasing comprehensibility.

The *trustworthiness* of the exchanges between participants involved in a dialogue will depend heavily on the nature of their intentions, which in turn will influence the level of trust which can develop between them. Trust has typically been related to predictability and goodwill between the parties<sup>30</sup>. Trust has also been conceptualised as an intersubjective social reality which results from the creation of shared meanings among actors, through a process of reciprocal communication that involves equal participation (Hardy, Phillips, & Lawrence, 1998). As discussed earlier, the achievement of PSM products presupposes the generation of shared meaning. Furthermore, the settings used for PSM activity are intended to express the collaborative nature of dialogue and provide the physical space where

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<sup>30</sup> Trust as predictability is defined as the probability with which an actor assesses that another actor will act in a certain way (Gambetta, 1988; Lewis & Weigert, 1985; Luhmann, 1979); trust as goodwill is more than predictability, and includes mutual expectations of reciprocity between actors which reduces conflict and opportunistic behaviour (Ring & Van de Ven, 1994).

shared meaning can be created<sup>31</sup>. Provided that PSMs can effectively achieve shared meaning through negotiation (rather than persuasion) of multiple meanings, it can reasonably be argued that they will also be contributing to the emergence of trust among domain actors during dialogue, which in turn will increase the sincerity of their communicative exchanges.

Claims of legitimacy or *rightness* can be based on either knowledge/expertise or the authentic representation of interests, and are aimed at mobilising the consent of actors (Forester, 1989). With the use of PSMs, illegitimate claims regarding knowledge or expertise are likely to be revealed and countered by exposing them to critical scrutiny from a variety of perspectives. Furthermore, PSMs can help to clarify what expertise is appropriate or relevant in the problem situation being addressed. On the other hand, the legitimate representation of interests may be explored and debated through PSM processes of stakeholder identification and analysis (see below), which can lead to the recognition of the need to incorporate additional participants, with legitimate stakes in the domain-level problem, in the dialogue process. By providing the means to address illegitimate claims concerning knowledge, expertise or authentic representation, it can be argued that PSMs can in principle reduce the opportunities for domain actors to manipulate consent during dialogue and thus increase legitimacy.

Finally, the *accuracy* of communicative exchanges depends upon participants' access to and use of information during dialogue. The misrepresentation of issues may be the result of deliberate manipulation of information, particularly information of the quantitative type contained in models used to support dialogue. As Rosenhead (1994) points out, it is not unreasonable to conceive the

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<sup>31</sup> It is possible for collaborators to engage in dialogue without interacting face-to-face within the same physical space (Parsons & McBurney, 2003). Electronic collaboration, a recent development within the operational research, systems, computer science, and social psychology fields, involves collaboration among actors engaged in a common task using electronic technologies (Pinsonneault & Kraemer, 1989). Different technologies are used in e-collaborations including email, web-based discussion boards, 'chat rooms', teleconferencing, groupware, and group decision support systems. The e-collaboration process can be synchronous, where actors collaborate in real time, or asynchronous, where, actors collaborate at different points in time (McGrath & Hollingshead, 1994). E-collaboration is outside the scope of this research, but the interested reader is referred to McGrath and Hollingshead (1994), who provide a comprehensive review of collaborative groups interacting with technology.



instrumental manipulation by actors of quantitative models to produce results which legitimise their vested interests. Another form of model manipulation can take place when the model is developed in the 'back-room' and its results communicated with a degree of complexity which ensures that only the more powerful actors can understand them (Forester, 1989). The participatory and interactive nature of the PSM process, together with the reduced quantitative data requirements of PSM models (see Section 4.1.2), means that there will be little room for this type of manipulation before or during dialogue. This does not mean, however, that domain actors may not attempt to manipulate PSM models to misrepresent issues or 'manage meaning' (see Section 2.2.1). What makes this possibility less likely is that both the elicitation of PSM data and the data itself are transparent and open to scrutiny by all actors during dialogue.

By improving the quality of dialogue with the application of PSMs, the possibility of power manipulation to serve the vested interests of particular domain actors becomes more remote. This means that the products of dialogue (i.e. shared problem structure and shared meaning) are more likely to be obtained through negotiation rather than persuasion<sup>32</sup> (see Section 3.2.3). Furthermore, this emphasis on negotiation is likely to facilitate mutual adjustments in the power balance of actors during dialogue.

The analysis carried out in this chapter has investigated the potential role that PSMs can play in assisting actors of a domain who engage in dialogue as part of a collaboration process to address a domain-level problem of common interest, in order to reach joint agreements with respect to it. Based on the conceptual work conducted in the development of our model of the analytical contribution to a

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<sup>32</sup> An interesting question is whether PSMs are able to affect the mobilisation of power sources outside dialogue. As discussed in Chapter 3, the achievement and potential implementation of the products of dialogue during the collaboration process will be affected by the ability of actors to mobilise power both before and after dialogue. Evidently, PSMs have been designed to assist actors during dialogue and thus it may appear obvious that they have little role to play outside dialogue. Nevertheless, it has been observed that the effective mobilisation of power sources after dialogue will ensure the implementation of the products of dialogue. Provided that the products of dialogue resulting from the application of PSMs are indeed implemented, it can be argued that they are in principle contributing to a potential mobilisation of power sources by domain actors after dialogue.

collaboration process (see Chapter 3), together the discussion of PSMs within a collaboration context carried out in this chapter, it is now possible to elaborate a hypothesis more precise to that formulated in Chapter 1. The general purpose of this strategy, it may be recalled, was to clarify the potential role of the analytical assistance provided by PSMs in helping collaborators create shared meaning about a domain-level problem and reach agreements with respect to it.

The hypothesis can now be rephrased as follows:

*The analytical assistance provided by PSMs to a collaboration process can be expected to operate principally through improving the quality of the dialogue in which actors of an inter-organisational domain participate in order to address the domain-level problem. PSMs generate this effect through facilitating the structuring and sense-making activities embedded within dialogue, and the negotiation of a shared structure for the domain-level problem. Improvement in the quality of dialogue will contribute to the emergence of shared meaning about the domain-level problem. Effects can also be expected on accommodations in the power balance among domain actors. In combination, these effects should tend to increased actors' ownership of the commitments achieved during dialogue.*

Table 4.3 below provides a summary of the potential principal effects which have been hypothesised in the preceding discussion, and which are expected to take place in the dialogue sub-area of the conceptual model of collaboration developed in Chapter 3 if the claims for PSMs can be substantiated in this context.

**Table 4-3: Potential principal effects expected from PSM during collaboration**

Expected principal effects
Improved quality of dialogue through increases in the level of comprehensiveness, trustworthiness, rightness, and truthfulness.
Achieved shared meaning about domain-level problem.
Adjustments in the power balance among actors.
Increased ownership of commitments achieved.

These expected effects listed in Table 4.3 can be seen as representing a set of criteria which can be used to evaluate PSM-supported interventions. Eden and Ackermann (1996) argue that any attempt at evaluating systems for group support (such as PSMs) should pay equal attention to criteria from the perspective of the system users (e.g. group members, facilitators, key actors in the process, client, and sponsor), as well as from the perspective of those not involved as direct recipients of the systems (e.g. academics, consultants, systems developers, and vendors). The criteria listed in Table 4.3 are mainly concerned with the evaluation of the hypothesis derived from our theoretical model of collaboration. In Eden and Ackermann's terms, therefore, it represents evaluation criteria from the perspective of a researcher who is not necessarily a direct recipient of the system.

The next chapter will discuss the design of a research methodology based on the analysis provided in this chapter, intended to explore whether the potential role of PSMs identified in principle was realisable in practice.

## 5 Research methodology

Any research involves a particular framework of ideas embodied in a methodology which is designed and carried out to investigate an area of interest (Checkland, 1985, 1991). In this research, the area of interest is the collaboration process, and the framework of ideas is represented in the conceptual model developed in Chapter 3. This chapter will justify and describe the design of a research methodology appropriate to investigate whether the potential of PSMs identified in principle in Chapter 4 was realisable in practice.

The two main paradigms of research that can be found in the social sciences are the positivist and the interpretivist paradigms<sup>33-34</sup>. The adopted research design, action research (AR), falls within the latter paradigm. Before describing the characteristics of AR, summary descriptions of the positivist and interpretivist paradigms will be given below, together with a justification for adopting an interpretivist, rather than positivist, design for this research.

The key idea in the positivistic paradigm is the view that the social world exists externally; that it is identifiable, tangible and divisible into component parts; and that stable cause and effect relationships exist within it, which can be identified and tested through hypothetico-deductive analysis and precise measurement (Burrell & Morgan, 1979; Easterby-Smith, Thorpe, & Lowe, 1991; Gill & Johnson, 1997). Positivist research is seen as value free and the researcher should

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<sup>33</sup> The term 'paradigm' is originally associated with the work of Kuhn (1962), who used it to describe the set of assumptions within which a community of researchers function during times of what he calls 'normal science'. According to Kuhn, science progresses during such periods in small steps, which refine and extend what is already known. The guiding assumptions allow a set of problems to be isolated and solved one after another within the criteria set by the accepted frame of reference. Occasionally problems of a quite different nature arise and the paradigm-induced expectations about the real world are not realised. If the lack of success is important and prolonged, the life of the community starts to alter. A period of 'crisis' ensues, during which the community focuses on the perceived anomaly and is forced to re-examine its own framework of assumptions. This leads to a 'scientific revolution' which alters radically the way human beings see the world, and leads to the development of a new framework of assumptions and ideas (i.e. a new paradigm) which accounts for both the old and the new problems.

<sup>34</sup> These represent extreme opposite positions. In practice, it is possible to adopt a pragmatic view by deliberately combining methods drawn from both paradigms (Easterby-Smith, Thorpe, & Lowe, 1991).

assume a passive role of neutral observation, avoiding influencing the phenomena under study.

The main objective of positivistic research is to discover universal laws or principles governing causal relationships. Such generalised knowledge can predict patterns of behaviour across situations, and be used to control them. Typical research designs consistent with the positivist paradigm include experiments and quasi-experiments (Campbell & Stanley, 1966; Cook & Campbell, 1979). An *experiment* is a test under controlled conditions that is made in order to examine the validity of a research hypothesis regarding the potential effects of an independent variable, known as 'treatment', on one or more dependent variables, known as 'outcomes'. All experiments involve the use of random assignment for inferring treatment-caused effects. A *quasi experiment*, on the other hand, differs from a true experiment in that the former takes place in the field (rather than in the laboratory) and does not require random assignment to create the comparisons from which treatment-caused change is inferred.

By contrast, the interpretivist research paradigm assumes that the world is produced and reproduced by human beings through social interaction (Burrell & Morgan, 1979; Easterby-Smith, Thorpe, & Lowe, 1991; Gill & Johnson, 1997). The social world cannot exist apart from them and thus cannot be perceived or measured in some objective or universal way. Social reality is thus subjective and can only be interpreted. Human beings act on the subjective interpretation of the world they perceive rather than as a direct response to external stimuli. Interpretivist research, unlike positivist research, is driven by 'human interests' (Habermas, 1971), and the researcher is part of the situation that is being researched.

The core of the interpretive research task is to understand action on the actor's terms. This means being able to understand how social practices emerge and are reproduced in language and implicit norms. The interpretive researcher develops interpretations or explanations of how subjective constructs are created and

maintained in a social situation. The relevance of these explanations depends on whether they make sense and give insights which can support the understanding of other similar but unique situations. Research designs consistent with the interpretivist paradigm include action research (Lewin, 1946, 1947; Rapoport, 1970) and ethnography (Bryman, 1988; Wax, 1971).

It is infeasible to address problems of the kind this research aims to study by means of a positivist research design. The characteristics of domain-level problems (see Chapter 1) would need to be unreasonably simplified in order to satisfy the requirements imposed by controlled experimentation. To illustrate this, consider the following. The hypothesis of this research, after its reformulation in Chapter 4, was that the analytical assistance provided by PSMs to a collaboration process is likely to lead to an improvement in the quality of dialogue in which actors participate in order to address a domain-level problem, and reach agreements with respect to it. A possible experiment to test the research hypothesis could involve the use of university students organised into two groups that would engage in a pre-defined complex problem which must be addressed through collaboration. Each student would be nominated to represent a particular 'fictitious' organisation and asked to role-play that organisation in the experiment. Each group would be constituted by the same organisations, each of which would have specific and differing interests and levels of power in relation to the pre-defined problem.

One of the selected groups would then be the *experimental group* and receive the treatment, i.e. it would make use of PSMs. The other one would serve as the *control group* and would not receive the treatment. Students would be randomly assigned to one of the experimental or control groups, and the intervention with PSMs would consist of applying PSMs with the experimental group to help them structure and make sense of the pre-defined complex problem. According to our hypothesis, the expected results would be, broadly, that PSMs would generate improvements in the quality of dialogue among members of the experimental group relative to that of the control group. Ideally with this type of research design

a high level of internal validity of the research findings is achieved (McGrath, 1982). *Internal validity* refers to the extent to which the experiment results can be attributed to the treatment (Campbell & Stanley, 1966; Cook & Campbell, 1979; Gill & Johnson, 1997; Preece, 1994; Robson, 1993).

Researching with student groups working on a set task, however, would reduce the complexity associated with the type of problem situations for which PSMs have been developed. PSMs are designed to assist groups with a history and/or at least expectations about a future, and who are engaged in activities aimed at alleviating a complex, non-repeatable problematic situation in which they have a real stake (Eden, 1995; Rosenhead & Mingers, 2001). Furthermore, as Eden (1995; 2000) points out, a PSM intervention involves a PSM researcher or analyst having to negotiate expectations and a contract with a client who usually pays for the PSM event and, most importantly, will have to live with its consequences. Therefore, researching with groups that do not exhibit the above characteristics significantly discounts evaluating some of the primary features of PSMs.

Quasi-experiments have the potential to overcome the highly artificial nature of the research process and context created with controlled experiments, as the former are conducted in the field rather than in the laboratory. By undertaking research in a natural, non-artificial setting a high level of external validity of the research results is usually achieved. *External validity* is concerned with the extent to which it is possible to generalise from the actual social context in which the research has taken place to other contexts (Campbell & Stanley, 1966; Cook & Campbell, 1979; Gill & Johnson, 1997; Preece, 1994; Robson, 1993). However, it is highly unlikely that two collaborative groups similar enough to serve as effective comparators could be found in the field. And even if similar groups could be found, the practicalities of the problematic situation being researched in the field may preclude the formation of experimental and control groups. Failure to identify two matching collaborative groups would generate uncertainty about the potential internal validity of the results, undermining any conclusions being drawn from the quasi-experiment.

The difficulties identified above make a potential positivistic research design inadequate for the purposes of this research, and thus led to the adoption of a design concordant with the interpretivist paradigm. Because PSMs are decision oriented approaches whose purpose is to help actors reach commitments to actions aimed at alleviating their problematic situations, the interpretivist design which is most appropriate for the purposes of this research is action research (AR). The rest of this chapter is structured as follows. The characteristics of AR and the implications that its adoption had for the research intervention, the hypothesis, and the validity of the research results are described in Section 5.1. The analytic techniques and tools used to support the interpretation of the research data generated during the research are described in Section 5.2.

## **5.1 Adopted research design and its implications**

This section discusses the adopted design for the research methodology. The main features of action research (AR) will be reviewed below. The implications of adopting such a design for the research will then be discussed.

### *5.1.1 Characteristics of an action research (AR) approach*

Several definitions of AR can be found in the literature (e.g. Checkland, 1991; Clark, 1972; Eden & Huxham, 1996; Foster, 1972; Hult & Lennung, 1980; Lewin, 1946, 1947; Rapoport, 1970; Susman, 1983; Susman & Evered, 1978). In this section, we will use the term AR as covering a number of approaches to the study of organisations including ‘action learning’ (Revans, 1972, 1978, 1982), ‘action science’ (Argyris, Putnam, & MacLain-Smith, 1982; Argyris & Schon, 1991), ‘action inquiry’ (Torbet, 1981, 1991), and ‘participatory action research’ (Whyte, 1991).

Essentially, AR is a form of research which results from an involvement by the researcher with organisational actors over a matter which is of importance to



them, and in which there is an intent by the actors to take action based on the research intervention (Eden & Huxham, 1996; 1999). Appropriate action is not based on knowledge established through the design and testing of controlled experiments. Instead, it is based on knowing how particular actors define their present situations, and on achieving consensus on defining situations so that planned actions will produce their expected outcomes (Susman & Evered, 1978).

An AR intervention may either be managed by the researcher, or co-managed by the researcher and the researched, and typically involves a cyclical process generally characterised by the phases of reflection, action planning, action taking, evaluation and learning (Chisholm & Elden, 1993; Greenwood & Levin, 1998; Susman & Evered, 1978; Whyte, 1991). Table 5.1 below illustrate the differences between AR and other forms of organisational intervention in terms of the different stages of the intervention process.

AR has three main objectives. First, AR aims to alleviate the practical concerns of actors in an 'immediate' problem situation (Clark, 1972; Rapoport, 1970). That is, a problem situation requiring actors to decide on action as a response to it. The second objective is to enhance the competences of the actors confronting their general problematic situation (Hult & Lennung, 1980; Susman & Evered, 1978). AR seeks to increase "the ability of the involved community or organisation members to control their own destinies more effectively and to keep improving their capacity to do so" (Greenwood & Levin, 1998, p. 6). AR achieves this by focusing on the development of the necessary communication and problem-solving procedures to enable actors to effectively respond to their environment (Susman & Evered, 1978).

Finally, the third aim of AR is to develop theory which has implications beyond those required for action in the domain of the research and thus produce new knowledge about a general class of problem situations (Argyris, Putnam, & MacLain-Smith, 1982; Clark, 1972; Eden & Huxham, 1996; 1999; Hult & Lennung, 1980; Rapoport, 1970). AR contributes to theory development by taking

actions guided by the theory which develops from the research process (see Section 5.2 below), and evaluating their consequences for the problems actors face in their particular situation (Susman & Evered, 1978). Theory may then be supported or revised on the basis of this evaluation (Eden & Huxham, 1996; 1999; Susman & Evered, 1978).

**Table 5-1: Comparison between action research and other forms of intervention**  
- adapted from Gill and Johnson (1997)

Intervention stages	Basic research	Action research	Consultancy
Entry	Researcher presents problem and define goals.	Client or researcher presents problem; mutually agreed goals.	Client presents problems and defines goals.
Contracting	Researcher controls as expert; keeps client happy; minimal contracting.	Business and psychological contracting; mutual control.	Business contract; consultant controls client.
Diagnosis	Researcher carries out expert diagnosis; client provides data.	Joint diagnosis; client data/researcher's concepts.	Consultant diagnosis.
Action	Researcher writes descriptive report; action may or may not take place; findings/results published.	Feedback; joint action plan; client action with support; findings/results published.	Consultant prescribe action; findings/results not published.
Evaluation	Rarely undertaken.	New problems emerge; generalisations emerge.	Rarely undertaken and usually by others than consultant party.

There are underlying implications of these aims for the roles of the researched and the researcher in an AR study. On the one hand, the researched seek to improve their problematic situation. On the other hand, the researcher has a dual role: that of a consultant and of an investigator or knowledge producer. These cannot be mutually exclusive. As a consultant, the function of the action researcher is to help the researched achieve their objectives. And as investigator the action researcher

also engages in the task of identifying lessons to be learned from the resulting experience, which can then be applied in other cases which are sufficiently similar (Eden & Huxham, 1996; 1999)

Some of the principal characteristics of AR have been discussed. There are, however, implications for the research of the adoption of an AR approach which need to be examined further. This examination is conducted in the following section.

#### *5.1.2 Implications for the research of adopting an AR approach*

This section will discuss the implications that the adoption of an AR approach has for the research intervention, the research hypothesis, and the validity of the research results.

Following an AR approach, the application of PSMs cannot itself be the exclusive or principal focus of the research. This is because, as discussed in Section 5.1.1, one of the aims of AR is to help the researched achieve an improvement regarding the problem situation they are confronting. Therefore, as well as conducting research on PSMs, there must be a focus on assisting an actual collaborative group in achieving its objectives through applying PSMs in circumstances in which these methods are expected to be helpful. Within this context, members of the collaborative group will be expected to bring to the research process their practical knowledge and experience about the problematic situation. And the researcher's contribution to the process is his or her theoretical knowledge and problem-solving skills (Elden & Chisholm, 1993; Greenwood & Levin, 1998; Susman & Evered, 1978).

Unlike research designs embedded within a positivist paradigm, in AR there is no hypothesis-testing or theory-testing (Checkland & Holwell, 1998; Eden & Huxham, 1996; 1999). The task of action researchers is rather an exploratory one in which hypotheses/theories are generated throughout the research process – a

process which is context specific. In other words, AR theories are grounded in action or emerge from the research process (Eden & Huxham, 1996; 1999; Glaser & Strauss, 1967; Glaser, 1993; Strauss & Corbin, 1990; Susman & Evered, 1978). This means that the research hypothesis stated in Chapter 4 cannot be tested as such in our AR study. Our investigation will end with a hypothesis or 'local' theory which reasonably explains the observations during the process, and which is a shared social construction resulting from the interaction between the researched and researcher (Eden & Huxham, 1996; 1999; Elden, 1981). This does not imply that the exercise of arriving at our research hypothesis was not useful. For such an hypothesis (and the conceptual model from which it was derived) provided an appropriate 'pre-understanding' or starting theoretical position (Checkland & Holwell, 1998; Eden & Huxham, 1996; 1999; Gummesson, 1991; Miles & Huberman, 1994). This pre-understanding helped in creating a temporary coding scheme in the early stages of data analysis as well as a framework against which the emergent theory could be tested during the latter stages of our AR intervention (see Chapter 7).

The nature of the AR process implies that it cannot aspire to achieve the same level of internal validity as that associated with positivist research (Campbell & Stanley, 1966; Cook & Campbell, 1979; Phillips, 1992). However, some level of internal validity is possible if action researchers follow an orderly process (Eden & Huxham, 1996; 1999), which can then be recovered by anyone interested in subjecting the research to critical scrutiny (Checkland & Holwell, 1998). Our systematic approach to the analysis the research data generated in our AR intervention will be described in Section 5.2.

The generalisability, or external validity, of research outcomes involves going beyond the project-specific context. The basis for generalisation in AR is narrow, situational and context-bound (Checkland, 1991; Checkland & Holwell, 1998; Elden & Chisholm, 1993; Greenwood & Levin, 1998; Susman & Evered, 1978). Nevertheless, as discussed earlier, one of the aims of AR is to have "some implications beyond those required for action or generation of knowledge in the

domain of the project” (Eden & Huxham, 1999, p. 276). In this sense, the results produced by our AR intervention can serve to inform other research projects, at least minimally to suggest areas which could be considered in other research situations.

History and context also play an important role in the generalisability of AR results. Knowledge is required about the history of the organisations participating in the collaborative group, their representatives and the relationships between them, as well as the broader context within which the research takes place. This is because it will help in the construction of judgments about the possibility of applying knowledge generated in one situation to another (Eden & Huxham, 1996; 1999; Greenwood & Levin, 1998). Therefore, it was important in this research to take history and context into account in the interpretation of the research results of our AR intervention (see Section 7.3.2).

We will defer the discussion of the AR study carried out in this research as well as the empirical results derived from it until Chapters 6 and 7 respectively. First, the approach adopted for the analysis of the data generated in the study is described in the next section.

## **5.2 Adopted data collection and analysis strategy**

As will be discussed in Chapter 7, the data generated in the AR intervention carried out in this research comprised a mixture of primary sources which included the researcher’s observations and notes, together with a series of tape-recorded, semi-structured interviews with the research participants. Semi-structured interviews are appropriate when the main purpose of a study is to understand the constructs actors use as a basis for their opinions and beliefs about a particular situation (Easterby-Smith, Thorpe, & Lowe, 1991; Gaskell, 2000; Jones, 1985). Within the context of this research, the purpose of conducting semi-structured interviews was thus to elicit the subjective meanings actors attached to their experience of using PSMs during the AR intervention.

The analysis and interpretation of the research data generated from the interviews required the use of an appropriate set of techniques and/or tools which could systematically identify and analyse actors' constructs and meanings, and thus help to achieve a high level of internal validity for the research results (see Section 5.1.2). The approach to the analysis of interview data adopted in this research is based on 'grounded theory' (Glaser & Strauss, 1967; Glaser, 1993; Strauss & Corbin, 1998). The potential perceived for generating an understanding of the subjective meanings actors attributed to their experience of using PSMs during the AR intervention was the main motivation for its inclusion within our adopted research methodology. The grounded theory approach offers a way of analysing qualitative data that systematically develops hypotheses or theories about the phenomena which have been observed. The grounded theory approach to data analysis is explained below.

The term 'grounded theory' was first formulated by Glaser and Strauss (1967) to refer to an approach they had developed during the course of research into American health care institutions (Glaser & Strauss, 1964, 1965), which enabled them to 'discover theory from data' rather than having to proceed by quantitatively testing hypotheses derived from the work of a few specialised theorists.

Grounded theory provides an 'open' approach to the analysis of qualitative data collected through participant observation, direct observation, semi-structured or unstructured interviews, or case studies (Easterby-Smith, Thorpe, & Lowe, 1991; Turner, 1983). It allows the systematic identification of a set of conceptual categories and their interrelations which develop as the analysis continues. These emerging 'grounded' concepts, derived from the data, are then used as the basic building blocks of the growing theoretical understanding of the phenomenon under study (Turner, 1983).

Glaser and Strauss' original methodological treatise has been taken further by others as well as themselves (e.g. Easterby-Smith, Thorpe, & Lowe, 1991; Glaser, 1993; Miles & Huberman, 1994; Strauss & Corbin, 1990; Turner, 1981; 1983). What follows is a brief outline of the essential types of data coding involved in using a grounded theory approach to the analysis of qualitative data (e.g. interview transcripts) as proposed by Strauss and Corbin (1998). These are: open coding, axial coding and selective coding.

*Open coding* refers to the analytical process of disaggregating the data into conceptual units which are then provided with a label or code. The same code is given to similar units of data. A unit of data might relate to a few words, a sentence or number of sentences, or a paragraph<sup>35</sup>. Strauss and Corbin (1998) suggest that there are three main sources from which codes can be derived: the data; the actual terms used by research participants (called 'in vivo' codes); and existing theory<sup>36</sup>.

The resulting codes are then compared and placed into broader, related groupings or categories. During open coding the categories are developed by focusing on their properties and examining their nature, relationships and dimensions. Each of these properties corresponds to a different continuum. For example, the property 'shade' of the category 'colour' varies along the continuum 'light-dark'. The process of breaking a property down into its dimensions is called 'dimensionalisation' (Strauss & Corbin, 1998).

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<sup>35</sup> During open coding, it is not the words themselves but their 'meaning' that matters (Miles & Huberman, 1994). The meaning a word or phrase has is derived from being a choice made about its significance in a given context (Bliss, Monk, & Ogborn, 1983). That choice excludes other choices that could have been made to 'stand for' that word or phrase, and that choice is embedded in a particular logic or a conceptual lens.

<sup>36</sup> In this research, following Miles and Huberman (1994), we started with a provisional list of codes derived from the conceptual model of collaboration developed in Chapter 3. By using such a list the theory, conceptual model or theoretical framework of an investigation is tied directly to the data. However, this does not mean that a set of initial codes cannot be re-defined or discarded when they seem empirically ill-fitting, or that new empirically driven codes cannot be inductively developed.

Whereas in open coding the main aim is to freely generate new categories and specify their properties and dimensions, *axial coding* looks for relationships between these categories of data that have been created from open coding (Strauss & Corbin, 1998). As relationships between categories are recognised, they are re-arranged into a hierarchical and/or network form, with the emergence of subcategories. Once these relationships have been recognised, they are formulated as hypotheses which are then verified against the collected data. Open coding and axial coding do not necessarily follow each other in a linear fashion. They are rather two ‘modes’ of coding between which the researcher is continually switching

The integration of categories to produce a grounded theory is known as *selective coding*. The aim of this process is to recognise and develop the relationships between key or core categories which have emerged from the analysis in order to develop an explanatory theory.

According to Miles and Huberman (1994), there are two general approaches to developing grounded theory: deductive and inductive. In the *deductive* approach, also known as ‘enumerative’ or ‘conceptual’ (Kaplan, 1964; Popper, 1968), the researcher starts with a preliminary conceptual framework, based upon existing theory, and looks for data that will confirm this framework. In the inductive approach, also known as ‘constructive’ or ‘generative’ (Becker, 1958; 1984; Zelditch, 1962), the researcher looks for patterns in the data from which a conceptual framework can be inferred ‘from the ground up’, leaving the testing of the emergent framework against existing theory for later.

Within this research, a mixture of the deductive and inductive approaches was used. As stated earlier, this research started with a conceptual model of the collaboration process. Such a model already carries some causal freight by suggesting which factors influence others logically or theoretically. The model elements and their interrelations represented our ‘pre-understanding’ of the collaboration process. Thus in this sense, our approach to data analysis was



deductive. However, following Eden and Huxham (1996; 1999), the hypothesised relationships embedded in our conceptual model of the collaboration process were ‘suspended’ during the early stages of the data analysis to decrease the chances of closing off new and alternative ways of understanding the data. A conceptual framework was thus built from the data, and then compared against our initial conceptual model towards the later stages of the analysis. In this sense, our approach to data analysis was inductive.

This chapter has provided a justification and a description of an appropriate research design adopted to investigate whether the potential of PSMs identified in principle in Chapter 4 was realisable in practice. In the following chapter, an account of the development of a PSM-based approach aimed at delivering the intended advantages of inter-organizational collaboration within the context of the UK construction industry is given, in preparation for the analysis and evaluation of its application within a particular construction partnership in the UK leisure sector, which will be presented in Chapter 7.

## 6 The Cross-Organisational Learning Approach

The implications for this research of following an action research (AR) approach have been discussed. They have helped to shape the intervention and to clarify issues of validity. This chapter provides an account of an AR intervention carried out within the UK construction industry, whose principal aim was to increase the value of construction projects. The intervention involved the development of a PSM-based approach that could help in delivering the intended advantages of structured collaboration, within the context of multi-organisational construction partnerships<sup>37</sup>. The approach developed, named the Cross-Organisational Learning Approach (COLA), uses Strategic Choice methods (Friend & Hickling, 2005), both to focus on the key issues faced by multi-organisational construction teams, and as the basis of construction project reviews.

The AR intervention to be described in this chapter was also used to investigate whether the potential role for PSMs with multi-organisational collaborative groups identified in principle in Chapter 4, was realisable in practice. The AR intervention generated a case study within a multi-organisational construction partnership in the leisure business, which served as a vehicle for examining the adequacy of the conceptual model developed in Chapter 3.

The chapter is structured as follows. Section 6.1 provides a review of collaboration within the UK construction industry. Next, an account of the action research project within which the PSM-based approach was developed is provided in Section 6.2. The development and characteristics of COLA are then presented in Section 6.3, in preparation for the discussion, in Chapter 7, of the work undertaken with three selected construction partnerships teams.

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<sup>37</sup> For further details see Franco, Cushman and Rosenhead (2004).

## 6.1 Collaboration in the UK construction industry

The UK construction industry has a long tradition of adversarial relationships between firms. This has led both to poor quality and productivity in projects due to information and knowledge hiding, and to major barriers to learning lessons for future projects (Barlow et al., 1997). A consistent theme of a series of government and industry reports following the Latham Report (1994) was the need to develop collaborative arrangements that persist beyond the individual project, thus increasing the incentives for inter-firm co-operation. In particular the industry-led Reading Construction Forum produced two important reports, *Trusting the Team* (Bennett & Jayes, 1995) and *The Seven Pillars of Partnering* (Bennett & Jayes, 1998), which influenced the development of partnering as a particular form of collaboration within the construction industry. Furthermore, the Construction Industry Board, set up to implement the findings of the Latham Report, produced a series of widely distributed reports which aimed to promote partnering throughout the supply chain. This led to the Government-sponsored Egan Report (1998) which outlined partnering as the basis for a shift in the industry mindset from lowest price to value for money and which has been the basis of continuing discussion in the industry.

The emerging partnering arrangements in the UK construction industry are typically led by individual construction clients, drawn from that restricted group of clients who have a consistent flow of construction work on buildings or facilities to be used for their own business rather than for selling on for use by others. Issues of the facility in use and whole life cost are particularly salient for these clients, and these can only be addressed by having a wider set of priorities than the cost of the facility at project completion. As a result clients of this kind have an incentive to make the cultural shift from single project tendering to partnering, with the implied re-focusing from lowest cost to a cost/quality balance.

Construction companies and consultants apply to become members of partnering arrangements partly because they see it as a way of securing repeat business, but

even more because they do not see themselves as able to afford to decline the possibility of work for these major clients. These partnering arrangements typically involve clients, main contractors and a range of professional firms and specialist sub-contractors, including: architects, designers, quantity surveyors, project managers, and mechanical and electrical contractors.

Proponents of partnering have argued that gains to all parties can be expected from the stability of arrangements; from the reduction in tendering costs; and from the easing of a claims-based mentality. Furthermore, partnering is seen as playing a key role in the generation of feedback learning processes, which in turn has been identified as a critical missing process in conventional construction arrangements (Bennett & Jayes, 1998).

Achieving the intended advantages of multi-organisational construction partnerships is, however, difficult due to the lack of trust between potential construction partners (Bennett & Jayes, 1995). This may arise, for example, where a previous history of bad contractual relationships between a client and service providers has resulted in serious difficulties for the client in obtaining value from its investment or the contractors getting paid appropriately. Conversely, as most partnerships in construction are client-driven, clients see themselves as the major stakeholders with ultimate rights over the partnership processes and outcomes; they can be very insistent in pursuing their own agendas, notwithstanding those of their partners, which can be a source of resentment.

In summary, the UK construction industry, its move towards the development of multi-organisational collaboration arrangements, together with the difficulties associated with obtaining the intended benefits of partnerships, represented an appropriate field to empirically investigate the usefulness of PSMs in assisting a collaboration process (as depicted in our conceptual model developed in Chapter 3). The AR intervention carried out within the UK construction industry is described in the following section.

## 6.2 The B-HIVE research project

It was against the background outlined in the previous section that an action research programme, known as the *Building a High Value Environment in Construction* (B-HIVE) project, part of an Engineering and Physical Sciences Research Council (EPSRC) programme aimed at increasing the value of construction projects, was launched. Here “value” was seen as taking account in a general way of both the requirements of the different stakeholders of a construction project (for example: whole life cost, organizational profitability, quality, time to trading) and the processes involved in delivering such value. B-HIVE and its offspring, the COLA approach, are described below.

The B-HIVE project was established with funding from the EPSRC and the then Department of the Environment, Transport and the Regions. It was a joint industry-academic action research project whose aim was to explore the obstacles to effective partnering, and to develop models, practices and information systems infrastructures to overcome them. The B-HIVE project partners are listed in Table 6.1 below<sup>38</sup>. The researcher participated in the B-HIVE project as a full time Research Officer, and the account which follows is principally based on the researcher’s notes, B-HIVE research documents, and discussions during B-HIVE project research meetings.

The main objectives of the B-HIVE project were to: (1) analyse the issues associated with adding value to construction projects through teams collaborating within temporary multiple organizations, with a focus on work processes and information management; and, (2) demonstrate on live projects how information and communication technologies and problem structuring methods can support re-structured project organization.

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<sup>38</sup> Full details of B-HIVE project participants are given in Appendix A.

**Table 6-1: List of B-HIVE project members**

Partner	Institution/organisation
Academic	London School of Economics and Political Science, Department of Information Systems. London School of Economics and Political Science, Department of Operational Research. Leeds Metropolitan University, Department of Information Systems.
Industrial	Taylor Woodrow Construction. Thames Water Utilities. Whitbread Hotel Company. Davis Langdon Consultancy. Ove Arup and Partners.
Sponsors	Engineering and Physical Sciences Research Council (EPSRC) Department of the Environment, Transport and the Regions (DETR)

As discussed in Chapter 4, PSMs are a family of methods that provide decision support to groups of diverse composition facing complex situations characterised by uncertainty and conflict. The multi-actor nature of the construction domain, the complexity of construction projects and the uncertainties that are a strong feature of the environment all suggested PSMs as appropriate decision support tools.

The issues of review and learning in construction projects were agreed as the focus for the AR stage of the investigation. As the B-HIVE project was itself a multi-organisational collaboration, agreement on this focus was itself complex and required a series of SODA-based workshops (Ackermann & Eden, 2001; Eden & Ackerman, 2001) (not discussed here) to identify and prioritise areas which were of concern within multi-party construction projects. The agreed focus highlighted a common concern with how the potential for learning from individual problems and the way in which they were tackled, could be realised for construction project team members and the learning transferred to other situations either within the partnership or outside it.

It was within this focus that the AR engagement with specific construction projects took place. This experience, and the cross-organizational learning approach (COLA) which it generated, are described in the following section.

### **6.3 The Cross-Organisational Learning Approach COLA)**

To achieve an initial assessment of the scope for project review and learning activities, the research team started with two post-completion review workshops for Whitbread PLC, one of the industrial partners. The projects selected for review were a hotel bedroom refurbishment and a new hotel restaurant respectively. The purpose of the workshops was to review the completed projects with particular reference to the statement, development and delivery of the project brief. The two workshops were facilitated by an industry member of the research team (who was also a member of Whitbread) and each included six participants representing the client, the main contractor, the architect, the project manager and the quantity surveyor.

Drawing on Whitbread's previous experience, these reviews made use of value management techniques (Connaughton & Green, 1996). A major element of the value management approach in construction consists of the holding of one or more workshops before the start of the project, whose aim is to establish the strategic plan by which the project should develop. Therefore, the approach had to be adapted for the purposes of post-completion review, and the resulting workshop process focused on analysing alternative ways in which the project brief could have been managed and delivered.

These initial workshops constituted a participative means for eliciting concerns and suggestions from Whitbread's contractors and subcontractors for future project management improvements. It is notable that these workshops were seen as a radical departure by many of the subcontractors, and that they were surprised and pleased to have their contributions elicited, valued and developed.

The two value management-based workshops identified issues encountered about project management in general; the benefits gained from partnership; and how the identified issues related to the creation of value both for the construction client and for the contractors and subcontractors. However, it proved difficult to prioritise these issues which were elicited; to establish evaluation criteria for deciding on actions; to identify inter-relationships between issues and between multiple accountabilities; and to achieve commitment to, and ownership of, the recommendations made. This was partly because of time constraints of the participants (not all could stay for the whole session), and partly because the methodology used seemed unsuitable for its subject matter. The issues discussed in the workshops were characterised by the interconnectedness of a number of the problem areas discussed; uncertainty regarding the practicability, desirability and effectiveness of proposed actions; and multiple value systems and criteria for assessing alternative courses of action. Despite this complexity of the issues the proposed actions, for example 'keep successful teams together', were simplistic. They neither placed obligations on named individuals or organizations nor identified the other changes that were necessary to enable the desired outcome to occur.

It is issue characteristics of the above kind that PSMs are designed to address. From among the PSMs described in Chapter 4, the Strategic Choice Approach (SCA) (Friend & Hickling, 2005) seemed an appropriate candidate for use in the B-HIVE project. SCA is an approach based on incremental progress. It offers the scope to distinguish between decisions that need to be made now, and those that are best left open for future resolution. This distinction is expressed through a 'progress package' that also incorporates a balance between those areas of uncertainty to be tackled now by specific exploratory options (i.e. investigations, consultations or negotiations), and those that should be addressed, if at all, through some form of contingency planning.



In addition, SCA seemed to present obvious advantages over other PSMs. First, SCA supports interactive group work. Although most PSMs are designed to work with groups, in many of them group work does not start from the beginning of the application of the method. Interactive group work in SCA is immediate unlike, for example, SODA in which initial interviews with participants are carried out separately<sup>39</sup>; or SSM in which the finding out stage is not necessarily or particularly a group activity.

Second, of all PSMs, SCA places a stronger emphasis on the convergence, rather than divergence, dimension of decision making. An SCA workshop tends to start by simultaneous identification of areas for choice, alternative options for actions, criteria for choice, and uncertainties. By contrast, SODA and SSM require of the group a significant amount of hypothetical conceptual work involving the generation and manipulation of ideas which are not always directly and concretely related to their own experience<sup>40, 41</sup>.

Finally, SCA provides participants with a visible output in a structured form in each of its stages (see below). In the case of SODA and SSM, on the other hand, visible outputs tend to be available to participants only in the final stage of applying the methods, and in no particular format.

All the above reasons, together with the good fit between the characteristics of SCA and the process issues observed at the value management workshops, led the research team to decide to adopt SCA as the basis of its approach to project review. To accommodate the needs of the B-HIVE project, however, the framework of SCA was adapted and extended beyond its focus on decisions and

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<sup>39</sup> Recently, however, individuals interviews are less used in SODA in favour of group workshops using the oval mapping technique (OMT) (see, for example, Ackermann & Eden, 2001).

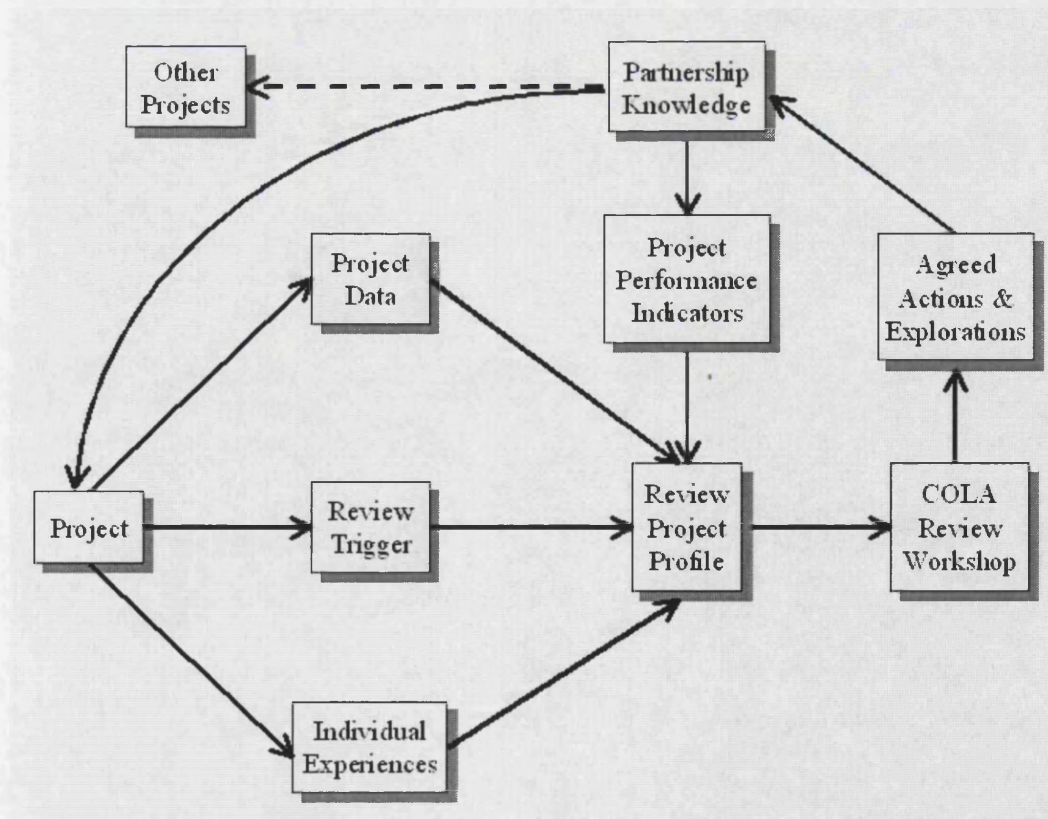
<sup>40</sup> Drama Theory and Robustness Analysis were not considered in this research because most members of the research team were not familiar with either of these methods.

<sup>41</sup> The use of a multi-method approach (Mingers, 2000; Mingers & Brocklesby, 1997; Mingers & Gill, 1997) in the B-HIVE project was also discarded due to the high demands it would have imposed on the potential users. This was mainly because it would have taken considerable amounts of time and effort for them to familiarise themselves with and learn about different methods and their associated techniques, tools and technical jargon. This constraint, in conjunction with the time pressure to meet deadlines within the B-HIVE project, led to the decision to concentrate on using one PSM only.

specific commitments. In particular this extended approach allowed for reflective evaluation on past project actions as part of a wider developing process of learning and knowledge creation for application at some future time.

The developed review and learning process was labelled the *Cross-Organizational Learning Approach* or COLA and it is shown in Figure 6.1 in schematic form. The connections shown in the figure are those which were included in the diagrams of the COLA process which were used during the B-HIVE research. Other connections could have been shown and made explicit, but this would have been at the expense of clarity of presentation and ease of developing an understanding of the most important elements of the process. What follows is a description of each of the elements of the COLA process depicted in Figure 6.1. Terms which refer to the elements of the COLA process will be denoted in *italic*.

Figure 6-1: The COLA review process



Starting from the far left of Figure 6.1 we have the *project* itself, which generates ‘hard’ *project data* in the shape of designs, programmes, records, progress reports, critical incidents, performance information, organizational charts, and so forth. However the project also creates what can be conceptualised as ‘soft’ project data in the form of *individual experiences* of the participants - individual not only because each of them will have been exposed to different aspects of the project, but also because they enter the project with differing perceptions of, and expectations from, it.

Events or circumstances (within or impinging on the project) that become *review triggers* are those which initiate the COLA review. There are two types of review triggers: programmed and non-programmed. A programmed review is arranged to occur at a clear break-point in the life of the project (e.g. stage completion, project completion), while a non-programmed review is a response to some unplanned event or set of circumstances that seems to offer unforeseen difficulties or opportunities, and so to merit further investigation. These may include issues that need to be resolved or innovations that need to be discussed.

In preparation for a review, the participants’ views of the project are then collected through the use of questionnaires alongside hard project data to form a *review project profile*. (In the case of unprogrammed reviews this would be done only if time and urgency permit.) *Project performance indicators* set by the partners are included in this profile; these are pre-set project evaluation criteria designed to assist participants in determining key areas for discussion and decision at the subsequent *COLA review workshop*. This workshop is facilitator-driven, and its methodology is derived from the Strategic Choice Approach (SCA) (Friend & Hickling, 2005).

A COLA workshop iterates through four stages: *focus*, *options*, *plans* and *commitment*, which are derived from Strategic Choice’s shaping, designing, comparing and choosing modes. COLA may make use of some of the distinctive

tools of Strategic Choice, for example decision graphs, or comparative advantage charts. However it is in the emphases of the stages and in the flow of the process between them, rather than in the technology employed *within* the stages that the Strategic Choice influence is most apparent.

In the *focus* stage, participants discuss the project's victories and successes and identify key opportunities for improvement. The discussion is informed by the results of the pre-workshop questionnaire, and the output of this stage is a focus consisting of a set of urgent, important and interconnected opportunities for improvement that is small enough to be manageable during the workshop.

In the *options* stage, participants are helped to generate options for improvement within the chosen focus in the previous stage. A consideration of the implications of the distinction between single- and double-loop learning (Argyris, 1999) led to a significant change in this stage of the process for later workshops. Options can appear to be self-evidently beneficial, but more deep-seated problems may exist which prevent apparently obvious innovations either being implemented or, if implemented, achieving the intended improvement. A discussion of possible blockages to action was introduced into this stage, in which discussion was focussed on development of initiatives to remove these blockages.

The *plans* stage involves participants in identifying the value criteria needed for the comparison of options for improvement and in evaluating the options against these criteria – though in the process they commonly also uncover uncertainties which stand in the way of identifying a straight-forward preferred solution. Finally, in the *commitment* mode, the group progresses towards agreement in some areas and sets up explorations and/or consultations in others (see *agreed actions and explorations* in Figure 6.1).

In each of these four stages information is both elicited from and agreed by the participants. It is recorded on post-its and flip charts, and can be entered into a computer via the STRAD software (Friend, 1992), although the approach can also

be used without computer support. In the non-computer supported version of the COLA workshop, the flip charts form a trace of the progress made. They are often photographed and issued as a record to assist participants after the meeting.

The output of these four stages of the COLA workshop feeds into *partnership knowledge*, which represents the accumulated knowledge built up within and between the construction partnership members, drawn from the knowledge resources of the partners. The value gains which partnering has the potential to deliver depend on this bank of knowledge, and it is the strategic aim of the COLA review process to augment this bank. In order to achieve this, individual reflections on the events of the projects and insights on problems and possible improvements need to be shared. This exchange and the resulting discussion create new understandings, and agreements on actions that embody these understandings. This knowledge, both that embodied in the agreed actions, and that arising from the process of arriving at them, needs of course to be recorded and disseminated in order to become effective.

Partnership knowledge, like individual or organizational knowledge, is in part written and formal and in part unwritten and tacit (Polanyi, 1967). Formal partnership knowledge is expressed in procedural agreements, notes of the effectiveness of different processes, benchmarks, key performance indicators, materials, designs and so forth. By contrast, tacit partnership knowledge consists of the knowledge individual partner organizations have of each other and of how the written knowledge can be applied and implemented in practice, as well as of undocumented inter-organisational routines. Each cycle of COLA is intended to make part of this tacit knowledge explicit so that it can be debated and shared. Furthermore, the feedback structure of the COLA review processes supports the construction partnership by tracking the *agreed actions and explorations* as well as their value impact in the current and *other projects*.

In the next chapter, a case study drawn from the Whitbread partnership describing the use of COLA by three multi-organisational construction project teams will be

presented together with an analysis and interpretation of this experience. The planned application of COLA to the Whitbread partnership was expected to assist partners in sharing and collating their learning experiences of the projects and the partnership, and in disseminating the lessons learned within the partnership.

## **7 The B-HIVE case study**

In Chapter 6, the B-HIVE project carried out in the construction industry and its offspring, the Cross-Organisational Learning Approach (COLA), were described. As will be recalled, COLA is an approach based on a particular problem structuring method, namely the Strategic Choice Approach (SCA). It was proposed that the effects of SCA/COLA for the actors participating in a multi-organisational construction partnership would be evidenced principally through the capture, integration and dissemination of learning within the partnership.

A case study carried out during the action research phase of the B-HIVE project is discussed in this chapter. The discussion is structured as follows. In Section 7.1, a description of the work undertaken with the collaboration selected for the study is presented. This background information prepares for the analysis of the data generated during the study in Section 7.2. Finally Section 7.3 presents an evaluation of the research findings in terms of the original conceptual model of collaboration (developed in Chapter 3), the potential shortcomings of the research process, and the implications of the research findings for the wider use of PSMs with multi-organisational collaboration teams.

The information provided throughout this chapter is drawn from a mixture of sources which comprised: the researcher's field observations and notes; minutes of the B-HIVE research meetings; email correspondence between the B-HIVE team members; responses to pre- and post- SCA/COLA workshop questionnaires; records from the SCA/COLA workshops; and transcripts from tape-recorded, semi-structured interviews carried out with the study participants. All this information provided a rich data base with which to examine the impact of the SCA/COLA review process within the Whitbread construction partnership.

Before the discussion of the case study, however, it is worth noting that not all of the concepts introduced in earlier chapters will feature explicitly in this account. In Chapters 1 to 3 especially a variety of concepts were developed not all of which

played an overt role in this practical experience. These concepts – which include inter-organisational domain and temporary negotiated order – were necessary in order to achieve an integrated explanation of the phenomenon of collaboration and the potential role of analysis in support of it. However they did not emerge directly in any natural way during this case study.

## **7.1 The period of field work**

This section describes the work undertaken with the collaboration which was selected for the case study, namely the Whitbread construction partnership. The Whitbread organisation and its hotel division, Whitbread Hotel Company, are described first. Thereafter the focus of this section is on the description of the application of SCA/COLA with the three partnership teams selected for the research.

### *7.1.1 Whitbread PLC and its hotel division*

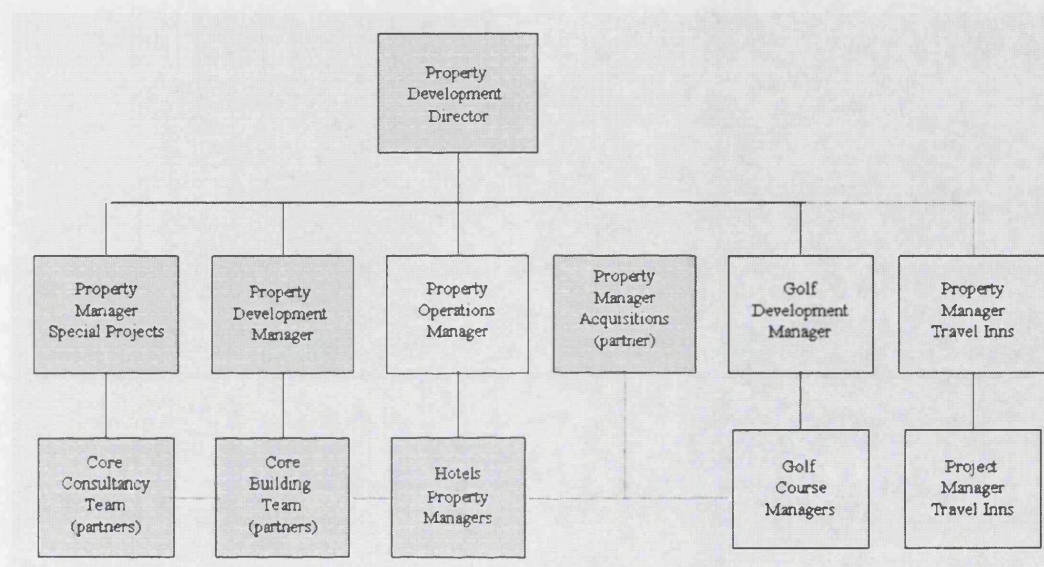
Established in 1750 as a brewery, Whitbread PLC moved away from its brewing operations towards the end of the 20<sup>th</sup> century to become a major British company within the hospitality industry, managing a number of well established brands in hotels, pub restaurants, and health and fitness clubs. It currently employs about 50,000 people and has 1,400 outlets across the UK. In the 2004 financial year, Whitbread PLC generated pre-tax of £240.8 million on sales of more than £1.8 billion.

The Whitbread Hotel Company (WHC) is one of the three divisions of Whitbread plc. It operates 2 major brands: Premier Travel Inn, a budget hotel chain created in 1987; and the four-star Marriott Hotel chain, whose franchise rights were acquired by WHC in 1995. During their involvement with the B-HIVE research project, WHC were engaged in a series of refurbishment projects of their hotels to meet the standards of the Marriott franchise, as well as in the construction of new Marriott hotels. This construction work was taking place within a then recently



established partnership between WHC and their major contractors and subcontractors, led by WHC. The organisational chart of WHC is shown in Figure 7.1, where the shaded boxes represent those who participated in the B-HIVE study reported here.

**Figure 7-1: Whitbread Hotel Company (Property Development) organisational chart**



The study with the WHC partnership lasted 18 months. The intervention can be divided into two identifiable periods: partnership project team selection and COLA application. The former involved the joint exploration between WHC and members of B-HIVE (see Chapter 6) of potential partnership project teams with which COLA could be applied. As stated earlier, WHC was at the early stages of their partnering arrangement, and this meant that there were not many partnership projects available for intervention. In addition, the selection criteria had to be based mainly on peoples' availabilities and, given the agreed focus on post-completion project reviews within B-HIVE (see Section 6.2), on whether a project would have been completed by the time the planned intervention was going to take place.

It was the above background which led to the selection of three partnership teams associated with the following construction projects: two re-development projects at Hollins Hall Marriott Hotel & Country Club, and at Meon Valley Marriott Hotel & Country Club respectively; and a design and build project for the new London Heathrow Marriott. SCA/COLA was then used with the three project teams to carry out a post-completion review of their projects. The following section will describe the application of SCA/COLA with the selected project teams.

### *7.1.2 SCA/COLA application*

Once the decision to apply COLA with the Hollins Hall, Meon Valley and London Heathrow project teams (in that order) was made, the B-HIVE team concentrated on when the post-completion reviews should be conducted. For Hollins and London Heathrow the reviews took place a short period of time after project completion (about 2 months in both cases). On the other hand, the Meon Valley the review took place about 6 months after the project had been completed.

These three SCA-based workshops were part of the wider COLA process (see Section 6.3), and each of the workshops involved seven to nine participants representing a variety of stakeholders including the client's property division and operational management, the main contractor, project management consultants, quantity surveyors, architects and designers, but did not include specialist trade contractors who were not part of the partnering arrangements. As the partnership involved a number of companies for each speciality, a different set of companies was involved in each workshop and only one company other than Whitbread was involved in more than one workshop<sup>42</sup>.

It was agreed between the Whitbread member of B-HIVE and the academic members of the research team that each workshop would be held at, or close to, the project site and carried out in a 5-hour session. The researcher was required to

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<sup>42</sup> Details of the three workshops are presented in Appendix B.

produce an adapted, shortened version of SCA largely because of the resulting time pressure. As will be seen, the SCA modes were followed loosely, and their names (shaping, designing, comparing, choosing) or other technical language were not used to avoid confusing participants. (These labels will be used however in this thesis for exposition purposes). This modification was needed because when the researcher had first discussed the basic ideas of SCA with the Whitbread member of B-HIVE, he then expressed his worries over the complexity of the methods and the language used, which he thought might not be welcomed by the workshop participants. Furthermore, it was agreed that the Whitbread member of B-HIVE was going to facilitate the workshops (see below), and thus it was also important that he became familiar and comfortable with the method and the terminology used. The researcher therefore produced a friendlier version of SCA with alternative common language explanations of its terms, which were then used during the workshops<sup>43</sup>. It was also clear from the outset that given the limited duration of the planned workshops, they would need to focus on the generation of outputs where the most progress could be made.

It was also agreed that for each of the partnership projects to be reviewed, a tour of the hotel, meal and overnight stay would be scheduled prior to the workshops<sup>44</sup>. The rationale behind this decision was to allow participants in a friendly social atmosphere, to see and reflect on how things had gone in the project that would be reviewed the following day, as well as preparing them for the nature of the discussions during the forthcoming workshop. More importantly, despite Whitbread's strong support for the B-HIVE research and the planned workshops, it was recognised that the presence of unknown outsiders in the workshop room had the potential of being disruptive to the review (which could bias the research results), as well as raise suspicions. Therefore, it was important that both the participants and the B-HIVE researchers had the opportunity to meet each other in advance of the workshop.

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<sup>43</sup> This modified version of SCA is presented in Appendix C. It also includes an opening session which focuses on 'project victories' as a means to both build confidence among participants at the workshop, and recognise that all projects have elements of successes to be learned from as well as outstanding issues.

<sup>44</sup> There was no overnight stay in the case of the London Heathrow review workshop.

In accordance with the COLA review process (see Section 6.3), information about the project was collated through the gathering of participants' answers to a pre-workshop questionnaire<sup>45</sup>. The purpose of this questionnaire was to allow the researcher to build a draft 'project review profile' (see Chapter 6) and to formulate preliminary decision areas (see Section 6.3). This profile and suggestions of key decision areas were circulated to participants before the workshops. Furthermore, as the time available for workshops was limited, the pre-workshop questionnaire helped in collecting information that would otherwise have required a whole session at the workshops, which was not possible.

The format of the discussions was similar to that associated with a typical PSM workshop (see Chapter 5). That is, they were facilitated and the room was arranged in a horse-shoe layout without tables. In addition, the workshops were 'recorded' using large flip charts fixed to the walls with 'blu-tack'. The purpose of recording the session in this manner was to enable as much of the work as possible to be exhibited at the same time so as to allow participants to make easy reference to previous work (Friend & Hickling, 2005). Furthermore, the resulting visual representation of the workshop's progress lent itself to the recording with a digital camera for speedy distribution to participants after the workshops.

As stated earlier, the facilitation of the workshops was the responsibility of the Whitbread member of B-HIVE. During the workshops, the researcher had the tasks of observer and recorder. Another academic member of the B-HIVE team was available to provide method specific support to the facilitator if needed, as well as technical support.

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<sup>45</sup> This pre-workshop questionnaire was developed by the researcher and another academic member of the B-HIVE team, covering the ranking of different aspects of the project under review including team relations, profitability and the management of time. The pre-workshop questionnaire also included space for free comments and asked for details of innovations, critical incidents and lessons learned. The length and detail of the pre-workshop questionnaire was constrained by the time workshop participants could devote to completing it, typically around one hour. The ranking exercise was designed in part to promote reflections that would be included in the free text section. See Appendix D for a copy of the pre-workshop questionnaire.

The first use of SCA/COLA took place during the post-completion review of the Hollins Hall Marriott Hotel & Country Club re-development. At the beginning of the Hollins Hall workshop, the facilitator started by explaining what it was hoped to have achieved by the end of the workshop and the general purpose of the COLA process. After these introductory remarks, and following the modified version of SCA (see Appendix E), the project victories were considered first. Next, the draft candidate decision areas which had emerged from the pre-workshop questionnaire results were presented and the workshop participants were asked to comment on them so that they could be validated. The candidate decision areas had been written on post-it notes placed on a flip chart, which allowed for easy modification of concepts by participants, and for patterns, relationships and overlaps to be adjusted and displayed by positioning and linking. Also, the seating arrangements made it easy for the participants to post their own ideas and take an active part in what roughly corresponded to the shaping stage of SCA.

There was general consensus between the participants at the Hollins Hall workshop about the areas where decisions needed to be made. The development of an effective and efficient briefing process was the main concern. This area was seen as strategic and crucial for the success of the partnership. During the workshop, the discussion moved away from strategic issues and concentrated on operational aspects of the Hollins Hall project. In particular, ‘snagging’ was specified as the most urgent area to address<sup>46</sup>. This area represented an operational issue related to the handover of the Hollins Hall project which the hotel operator was most concerned about<sup>47</sup>.

During the latter part of the workshop, participants engaged in the development and prioritisation of options for action which, according to the SCA/COLA workshop protocol (see Section 6.3), roughly corresponds to the designing and

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<sup>46</sup> A ‘snag’ is a defect in the resulting product (e.g. an air conditioning unit not working correctly),

<sup>47</sup> The post-workshops interviews confirmed that the hotel operators were mainly concerned with discussing the operational issues affecting a project handover. This was in stark contrast to the views of the other workshop participants, who were mostly interested on addressing strategic issues affecting the partnership.

comparing modes of SCA. Participants identified options within each of the two key decision areas (i.e. 'brief' and 'snagging'), and were encouraged by the facilitator to focus on options which they could effectively act upon. All the options surfaced were then discussed within the group to compare and evaluate in terms of their feasibility and consequences<sup>48</sup>.

All participants voiced their opinions and concerns about the options surfaced. This discussion gave rise to agreements regarding actions to be implemented, together with their responsible actors and tentative deadlines. Following the workshop event, communications between Whitbread and the B-HIVE team confirmed that all the agreed actions regarding the outstanding snagging issues of the Hollins Hall project, together with those related to the development of a new generic snagging process for all partnership projects, had been implemented within a two-week period.

The second use of SCA/COLA was during the post-completion review of the re-development project of the Meon Valley Marriott Hotel & Country Club, which took place shortly after the Hollins Hall workshop. The Meon Valley re-development project was considered a 'problematic' experience by the partners, and workshop participants showed willingness to reflect on and learn from the experience for the future benefit of the partnership.

The workshop format followed was similar to that at Hollins Hall. Participants were informed that some of the candidate decision areas which had emerged from the pre-workshop questionnaire results paralleled those which had been identified in the Hollins Hall workshop (for example, the area of 'snagging' had resurfaced). Consequently, and in order to gain maximum benefit for the partnership from the intervention, participants decided that the focus of the Meon Valley workshop should be on decision areas not previously addressed and at the strategic, rather than operational, level. This particular focus was facilitated by the review taking

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<sup>48</sup> Uncertainties were considered in the discussion although they were not explicitly articulated as such by the participants or the facilitator.



place nearly six months after completion, so that operational issues were by then less salient.

The facilitator of the Meon Valley workshop was the same as before, and on this occasion he had become more acquainted with the SCA method and thus was able to use the method with more confidence than before, as well as to make clear distinctions between decision areas, different types of uncertainties, and comparison areas during the discussion at the workshop. Table 7.1 below displays a sample of the decision areas, uncertainties and comparison areas identified during the Meon Valley workshop.

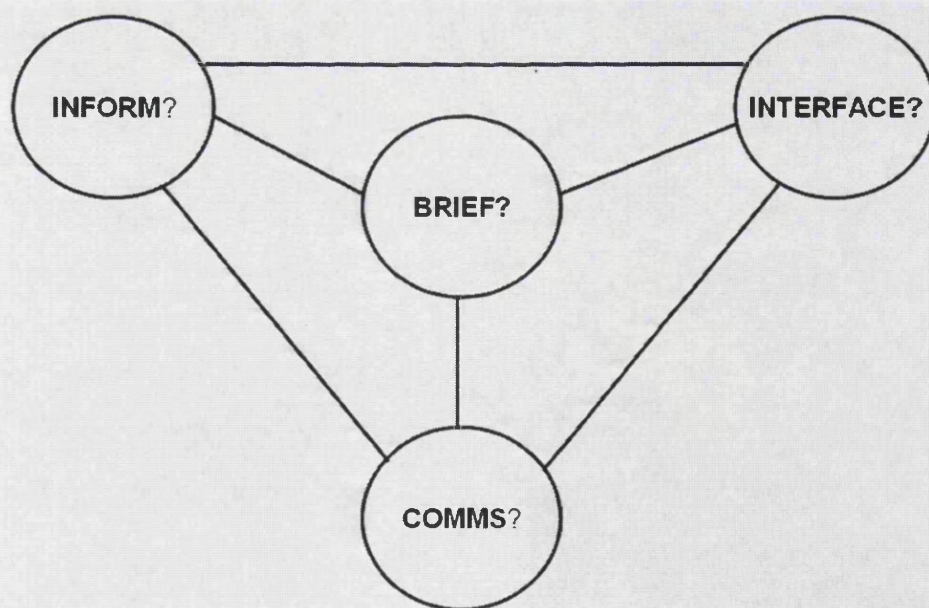
**Table 7-1: Sample of decision areas, uncertainties areas and comparison areas (Meon Valley)**

Decision Areas	
Description	Label
Level of detail specifications in the project brief.	BRIEF??
Information on existing operating buildings.	INFORM?
Approach to design/build.	APPROACH?
Management of subcontractors.	SUBCONT?
Management of interface between Whitbread and Whitbread partners.	INTERFACE?
Communications on expectations and roles.	COMMS?
Uncertainty Areas	
Description <sup>49</sup>	Label
Planning constraints (UE).	?CONSTRNT
Partners' expectations of each other (UV).	?EXPCTNS
Aspirations of stakeholders (UV).	?ASPIRATNS
Accuracy of assumptions in cost plan (UE).	?COSTASSUM
Marriott decision on model bedrooms (UR).	?MARRIOTT
Comparison Areas	
Description	Label
Flexibility of partners to manage situations.	FLEXI:
Speed of decision making when things go wrong.	SPEED:
Greater certainty about conditions.	CERTNTY:
Profitability.	PROFIT:
Mutual understanding of values.	VALUES:

<sup>49</sup> UE: uncertainties about the environment; UV: uncertainties about guiding values; UR: uncertainties about related agendas.

Developing the right level of detail in the project brief was the main concern expressed by participants. Three aspects related to this preoccupation were the management of the interface between Whitbread and Whitbread partners, the access to information about existing operating hotels, and the knowledge and communication of roles and responsibilities within the partnership. Figure 7.2 below reproduces the decision graph which was validated by the participants during the Meon Valley workshop. A link between two decision areas indicates that workshop participants expressed a belief that it could make a difference to consider this pair of decisions jointly instead of separately. For example, any choices regarding the level of detail in the project brief (labelled as 'BRIEF?' in Figure 7.2) will have an impact on the choices available for the management of the interface between Whitbread and Whitbread partners (labelled as 'INTERFACE?' in Figure 7.2).

**Figure 7-2: Decision graph from the Meon Valley workshop**



The decision graph in Figure 7.2 served to confirm at the workshop the key concerns of the partners and subcontractors, which had been previously identified by the researcher during the analysis of the pre-workshop questionnaires. More importantly, the discussion leading up to the validation of the decision graph



helped workshop participants to become aware of their diverse points of view about the issues confronting the partnership, and to clarify how these issues were interrelated.

Whereas the actions agreed at the Hollins Hall workshop resembled a standard 'action plan', participants of the Meon Valley workshop in effect developed a 'progress package' (Friend & Hickling, 2005). That is, some of the agreements reached involved immediate actions; whereas others comprised actions of the exploratory type. This difference may have resulted, as previously mentioned, from the facilitator's greater familiarity with the processes, techniques and tools of SCA. The Meon Valley progress package is shown in Table 7.2 below.

**Table 7-2: Extract from Meon Valley progress package**

Decision Area	Actions	Exploration	Deferred choices
BRIEF??		Liaise with Whitbread's Property Development Director and recommend that he drives bedroom models with Marriott.	If agreed, then identify bedroom models: what, when and ownership. Also, develop a process manual, identifying the different levels of detail required.
INFORMATN?		Liaise with Whitbread's Property Development Manager and recommend that QS function develop and manage a risk project profile for the benefit of all partners, which will also go into the roles and responsibilities document.	If agreed, then refurbish a 'sample' room prior to the start of building work to provide feedback on quality and expectations.
INTERFACE?	Develop and introduce a client, consultant, contractor satisfaction (CCCS) survey for each project and monitoring of results.		
COMMS?	Jointly develop a generic roles, accountability and responsibility matrix for partnership projects. Generic document to be adapted for each project and signed up by all partners.		

Finally, the last use of SCA/COLA during the B-HIVE study with Whitbread was during the post-completion review of the design and build project of the new London Heathrow Marriot Hotel. This time the facilitation task was given over to an academic member of the B-HIVE research team. The rationale for this decision was to test whether the perceived success of the first two workshops was due to the choice of facilitator (see Section 7.3.1).

Although the researcher had been working on the preparation of this workshop, he was not able to attend this event due to factors outside his control. Nevertheless, analysis of the workshop documentation showed that on this occasion the main focus of the workshop was on developing improved ways of managing project changes. This focus can be explained by the fact that the new Marriott London Heathrow hotel represented a particularly complex and expensive venture, a scale of project which Whitbread had never attempted before. In addition, the area of partnership development, identified as a decision area at the Hollins Hall workshop, was revisited. The documentary evidence together with post-workshop interviews with participants suggested that the discussions held in the London Heathrow workshop triggered a subsequent Whitbread-led strategic review of the whole partnership processes and agreement (see Section 7.2.2).

## **7.2 Analysis of research data**

The previous section has described the field work carried out in the B-HIVE study with the Whitbread Hotel Company (WHC) partnership. This section presents the analysis of the research data generated during the study. As already stated in Chapter 5, our initial research hypothesis (formulated in Chapter 4), and the conceptual model (developed in Chapter 3) from which it was derived, could not be tested as such in our AR intervention. Instead, an emergent 'local theory' which reasonably explains the role and impact of SCA/COLA within the Whitbread partnership (see Section 7.2.2 below) was developed. Nevertheless, our initial hypothesis did provide a starting theoretical position which then helped in creating a temporary coding scheme in the early stages of the data analysis (see

section 7.2.2 below). This initial theoretical position also helped by providing a framework against which the emergent local theory was tested.

The discussion in this section is organised in two parts. Section 7.2.1 looks at the responses to a post-workshop questionnaire by participants in the three SCA/COLA workshops. The analysis of the post-workshop questionnaire results provided some useful background information which informed the focus of the follow-up evaluation interviews carried out with the study participants. Section 7.2.2 then analyses the interview data.

### 7.2.1 *Analysis of the post-workshop questionnaire responses*

Responses to a post-workshop questionnaire based on the Competing Values Approach (CVA) to group process effectiveness (Reagan & Rohrbaugh, 1990; Rohrbaugh, 1987) were collected. The reason for using this particular questionnaire was to provide some initial background information about how the different participants perceived the effectiveness of the SCA/COLA workshop decision processes.

The CVA framework was originally developed by Quinn and Rohrbaugh (Quinn & Rohrbaugh, 1981; 1983) through an empirical analysis of the criteria used by organisational researchers to evaluate organisational effectiveness<sup>50</sup>. The original CVA framework was subsequently modified by Rohrbaugh and his colleagues to develop four perspectives concerning the effectiveness of *group decision processes* (Reagan & Rohrbaugh, 1990; Rohrbaugh, 1987): consensual, political, rational and empirical. The *consensual* perspective values participatory decision processes and the supportability of decisions; the *political* perspective values adaptable decision processes and the legitimacy of decisions; the *rational* perspective values goal-centred decision processes and the efficiency of decisions; and the *empirical* perspective values the use of data-based decision processes and

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<sup>50</sup> It is important to note however that the usefulness of the CVA framework has recently been criticised due to its apparent failure in eliciting the actual effectiveness criteria used by managers – see, for example, Walton and Dawson (2001).

the need for accountability of decisions. Thus there are 8 distinct performance criteria by which to judge effective group decision processes: one criterion associated with each perspective provides a standard for the nature of the process (i.e. participatory, adaptable, goal-centred, data-based), and one assesses the outcomes achieved (in terms of the supportability, legitimacy, efficiency, and accountability of the decisions). Rohrbaugh argues that the four perspectives and associated eight criteria all reflect important considerations in evaluating group decision processes. No single perspective is inherently right or wrong. However, personal values and situational pressures often tend to favour one particular perspective and its associated criteria (Rohrbaugh, 1987).

An instrument based on the CVA framework for assessing the effectiveness of group decision processes was developed by Rohrbaugh and his colleagues (Reagan & Rohrbaugh, 1990; Rohrbaugh, 1987) and validated and applied in a variety of settings (e.g. McCartt & Rohrbaugh, 1989, 1995). The instrument is a 40-item questionnaire in which each of the eight criteria discussed above is associated with 5 question items (see Appendix E).

The CVA post-workshop questionnaire was distributed to all the participants in the three SCA/COLA workshops within a week of each workshop. Of the 25 questionnaires handed out, 17 were completed and returned, a response rate of 68%. The questionnaire contained 40 questions asking participants to evaluate the (perceived) effectiveness of the SCA/COLA workshops in terms of the consensual, political, rational and empirical perspectives described above, using a six-point scale rating from 1 (strongly disagree) to 6 (strongly agree).

Before presenting the results, it should be stated that the questionnaire shown in Appendix E was subsequently shortened after the Hollins Hall and Meon Valley workshops. The need to develop this abbreviated version was due to the difficulties encountered by workshop participants with the original 40-item CVA questionnaire, which had been obtained from one of its authors (John Rohrbaugh). Indeed, in spite of the participants' initial willingness to complete the first

questionnaire, some of them found it either too long or too difficult to understand, or both, and thus failed to complete it properly. However, even the shortened version of the questionnaire was itself completed and sent back by only one third of the participants in the London Heathrow workshop. Therefore, the results reported below should be treated with caution. In addition, the small sample (N=17) meant that statistical analyses aimed at exploring possible explanations for observed variability in the perceived level of SCA/COLA effectiveness were not feasible.

The mean questionnaire results measuring the perceived effectiveness of the three SCA/COLA workshops across four decision making perspectives are presented in Table 7.3 below. Each score was computed for every participant group as the average of individuals' responses to questions associated with a particular criterion. Clearly the numbers of respondents within each participant group are unfortunately small. However, as already stated, the results reported in Table 7.3 are based on responses to quite a range of questions, which have been aggregated to produce the final scores.

**Table 7-3: Overall perceived SCA/COLA effectiveness across 8 performance criteria by participant group.**

Perspective	Performance criteria	WHC management (N = 2)	WHC partners (N = 9)	WHC hotel operators (N = 2)	Sub-contractors (N = 4)	Mean (N = 17)
Consensual	Participatory process	4.80	4.46	4.00	4.24	4.39
	Supportability of decision	5.00	4.97	4.40	4.29	4.75
Political	Adaptable process	5.20	4.54	3.60	4.59	4.51
	Legitimacy of decision	3.67	3.68	4.63	3.80	3.81
Rational	Goal-centred process	5.30	4.56	3.67	4.50	4.54
	Efficiency of decision	5.00	4.56	4.63	2.75	4.23
Empirical	Data-based process	4.00	4.41	4.63	4.15	4.33
	Accountability of decision	4.89	4.51	4.60	4.19	4.50

The results in Table 7.3 show mixed results for the criteria associated with the political and rational perspectives. However, the results in Table 7.3 show that the SCA/COLA workshops rated across all participant groups moderately to quite highly (i.e. scores equal to or greater than 4) against the performance criteria associated with the consensual perspective (i.e. participatory process and supportability of decisions). These results tend to suggest that SCA/COLA allowed participants to fully participate and express their ideas, feelings and concerns, which in turn led them to fully support the recommendations that resulted from the workshops.

Table 7.3 also shows that the SCA/COLA workshops rated moderately to quite highly across all participant groups with respect to the empirical perspective (i.e. data-based process and accountability of decisions). In terms of accountability of decisions, the results tend to suggest that participants felt that the records produced during the SCA/COLA workshops would allow them to trace back all the steps in the workshop process if needed, which made them feel prepared to be accountable for their workshop deliberations and recommendations. The high scores assigned by participants to the 'data-based process' criterion seem, however, counter to the spirit of PSMs. This is because, as already discussed in Chapter 5, one of the characteristics of PSMs is their use of subjective qualitative data as opposed to extensive factual quantitative data, and the empirical perspective emphasises the latter. This apparent contradiction may perhaps be explained as follows. During the workshops, a combination of subjective and factual information was indeed discussed by participants, although the latter type was never physically available nor 'accessed' in a formal way (e.g. through an information system). Subsequent post-workshop interviews (see Section 7.2.2) confirmed that participants felt that the level and type of information used in the workshops was appropriate to evaluate the options produced in the workshops with confidence. This may explain why SCA/COLA scored highly on the empirical perspective.

In terms of the perceived effectiveness of SCA/COLA between participant groups, the results in Table 7.3 show that, for both WHC management and WHC partners, SCA/COLA rated quite highly on almost all dimensions. These results tend to suggest that both WHC management and WHC partners viewed SCA/COLA as providing an adequate balance between the social (i.e. consensual perspective) and technical (i.e. rational perspective) aspects of the workshop process; allowed relevant information to be inputted to the process (i.e. empirical perspective); and took account of the inter-organisational context of the WHC partnership (i.e. political perspective). It is important to note, however, that the 'legitimacy of decision' criterion scores are relatively low. These results seem to indicate an anxiety amongst WHC management and WHC partners' representatives about the degree to which they could act and implement the workshop recommendations on behalf of their organizations

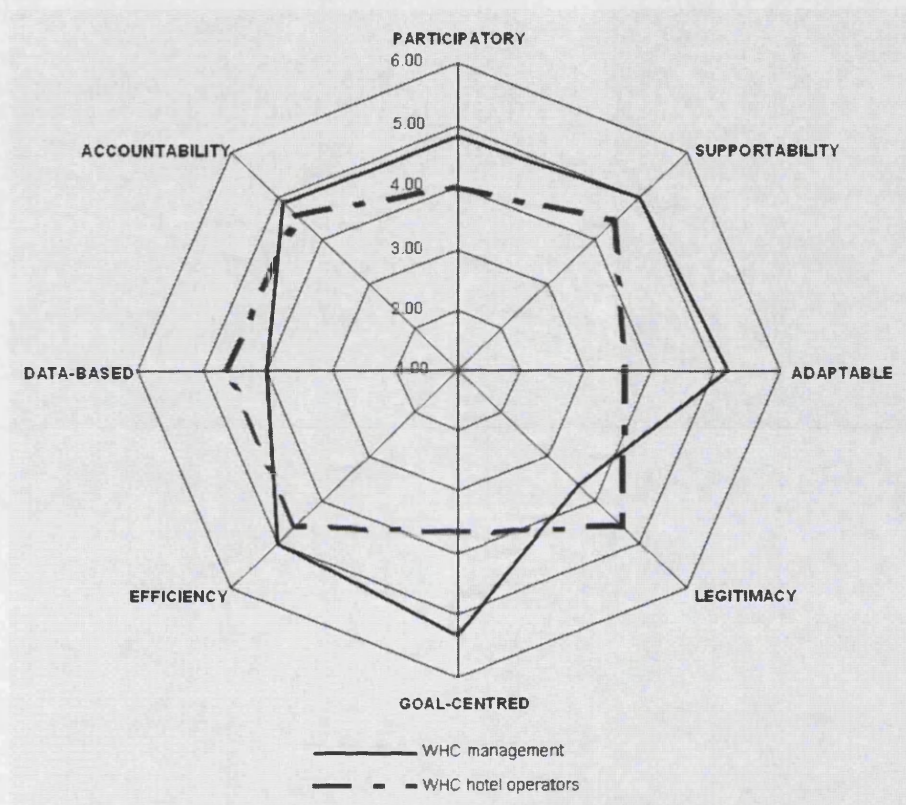
Figures 7.3 and 7.4 below seem to indicate that there were some differences between the ratings by WHC management and WHC operators, and between WHC partners and the subcontractors (who were not WHC partners). Figure 7.3 shows that, in general, WHC management rated SCA/COLA higher than the WHC hotel operators did across most performance criteria. For example, WHC management rated SCA/COLA as a highly adaptable and rational process (i.e. mean scores above 5). By contrast, WHC hotel operators' ratings of SCA/COLA on the same performance criteria are lower. These findings can perhaps be explained as follows. As already mentioned in Section 7.1.2, the hotel operators were mainly concerned about focusing the workshop discussions on the operational issues affecting a project handover. This was in stark contrast to the views of WHC management and the WHC partners, who during follow-up post-workshop interviews (see Section 7.2.2) expressed that they were mostly interested on addressing strategic issues affecting the partnership as a whole.

On the other hand, Figure 7.3 shows that WHC management rated SCA/COLA lower than the WHC hotel operators did on the 'legitimacy of decision' criterion. As already mentioned, these results seem to indicate an anxiety amongst WHC



management representatives about the degree to which they could act and implement the workshop recommendations on behalf WHC, which was not the case of the WHC hotel operators.

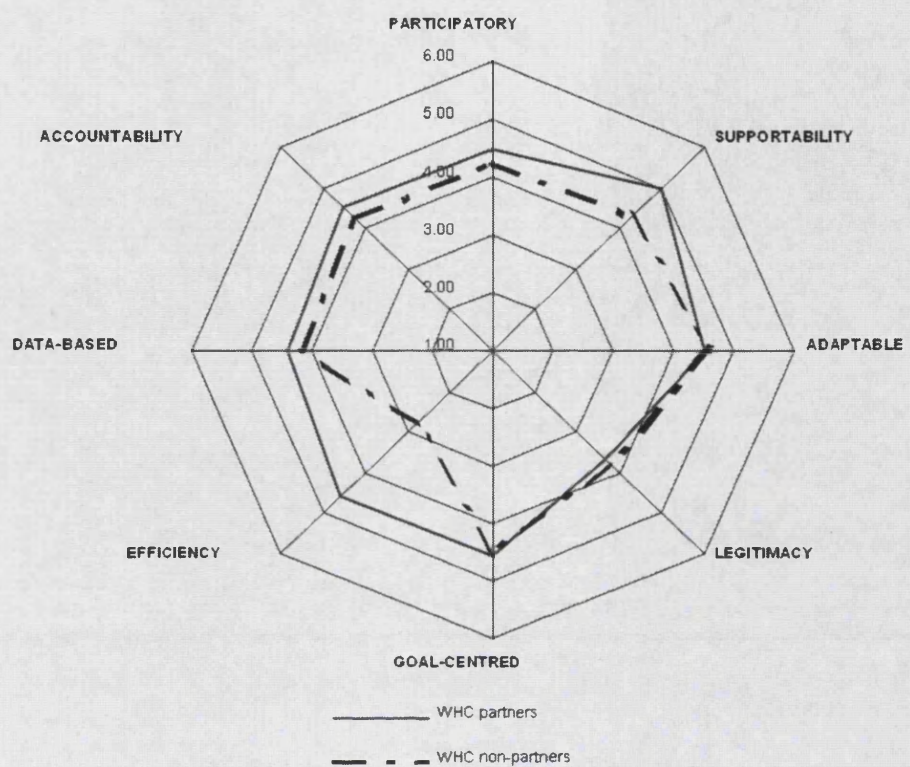
**Figure 7-3: Overall perceived SCA/COLA effectiveness across 8 performance criteria by WHC management and WHC hotel operators.**



Finally, Figure 7.4 shows that WHC partners rated SCA/COLA in general somewhat higher than the subcontractors did. In particular, subcontractors rated SCA/COLA much lower with regards to the 'efficiency of decision' criterion, compared to WHC partners (as well as to WHC management and WHC operators – see Table 7.3). These results could reflect their different status in the partnership, which means that their goals may have not been fully considered in the workshops, and thus the time and effort they invested in the workshops did not produce outputs they would have hoped to obtain through participation.



**Figure 7-4: Overall perceived SCA/COLA effectiveness across 8 performance criteria by WHC partners and subcontractors (i.e. non-partners).**



This section has discussed the responses to the post-workshop questionnaire designed to evaluate the perceived effectiveness of the SCA/COLA interventions by the study participants. As stated earlier, the small sample together with problems of reliability in the participants' responses places a limitation on the meaningfulness and validity of these findings. Nevertheless, analysis of the questionnaire responses provided useful background information which informed the design of the post-workshop semi-structured interviews with the workshop participants. The following section presents the analysis of the data generated from these semi-structured interviews.

### *7.2.2 Analysis of interview data*

Multiple, tape-recorded, semi-structured interviews with the study participants were carried out between November 1998 and April 1999. The average interview lasted between 60 and 90 minutes. The focus of the interviews was on the

participants' perceptions of the usefulness of the SCA/COLA workshops<sup>51</sup>. In addition, the researcher sought to understand as fully as possible the events within and around the partnership and the perceptions of the participants about these events. Table 7.4 below provides an overview of the sources of interview material

**Table 7-4: Overview of the interview material**

Workshop	No of workshop participants	No of recorded interviews
Hollins Hall	8	4 individual interviews; 1 group interview (with three participants).
Meon Valley	8	7 individual interviews.
London Heathrow	9	6 individual interviews.

As already stated in Chapter 5, a grounded-theory approach (Glaser & Strauss, 1967; Glaser, 1993; Strauss & Corbin, 1998) was employed to analyse the data. Three levels of analysis were carried out. First, interview data was (openly) coded (see Section 5.2) and studied for content and meanings until all relevant concepts were identified. Coding involves 'conceptualising' (Strauss & Corbin, 1998) data by breaking it into discrete parts (e.g. a paragraph, a sentence, a word) and giving each of these a name or code label which represents it. The code labels were chosen by the researcher<sup>52</sup> based on the imagery or meaning the coded data evoked when examined comparatively and in context. 'In vivo' code labels (i.e. actual concepts used by participants) were used whenever possible.

Figure 7.5 illustrates how data was coded on a particular interview segment. Code labels are shown in brackets with a bold font style in quotation marks.

<sup>51</sup> See Appendix F for a list of interviewees and Appendix G for the protocol which guided the interviews.

<sup>52</sup> Although the researcher had hoped to involve an independent coder to code the interview data to ensure the reliability of the coding process, time and money limitations made this impossible.

**Figure 7-5: Illustration of open coding process from a segment of interview data.**

(Researcher): How different is a normal review meeting from the workshop that we had?

(Interviewee): Most meetings, this is quite important as it's a psychological thing, most meetings take place around a table [**'sitting around the table'**], and invariably like the people who work for a particular team will sit there or there, and others will sit there, and others will sit there [**'groupings'**] and you end up with a table between [**'table in between'**] you and the other stakeholders, the other people who are party to the project personnel [**'groupings'**]. The fact is you didn't have a table at all, you just...you...everybody sat in a semicircle [**'around-the-table vs. semi-circle layout'**], and we were able to face each other without the protection of the table [**'feeling protected vs. feeling unprotected'**] and they had the opportunity to have their say [**'able to have your say'**]. You know and a couple of times, you know, I interrupted to say "hang on, we need to do something else" [**'control over the event'**], but the fact is you were not able to take a side [**'taking a side'**]. You were not able to lean back [**'leaning back'**] and not participate [**'participation'**] because you were there in front [**'being on the front'**]. You had nowhere to go because you had people behind you [**'not able to go'**], so Mike was in the middle, he was facilitating, and...so you had to talk about it [**'compelled to talk'**]. No it wasn't a meeting. I've never said it was a meeting. And I haven't described it as a meeting. It was a post contract, post project review workshop but it wasn't a meeting [**'review meeting vs. review workshop'**]. OK it was a meeting because people met. But it wasn't a formal meeting [**'formal review meeting'**]. In a formal meeting (we) would have had a certain amount of "taking a position" [**'positioning'**]. You know, we would have taken a position that "no, we don't agree with that and we are not going to..." you know, that's a natural...you are reverting to type [**'reverting to type'**] then and, right or wrong, people would take a stance [**'taking a stance'**]. But taking away the table and mixing the people up [**'mixing people up vs. groupings'**] you can't take a stance [**'taking a stance'**] because there's no table in between, [**'table in between'**] you just talking to the guy [**'compelled to talk'**]. And if you are not telling the truth, you know, I mean you are telling an out and loud lie. And it's easier to lie [**'telling the truth vs. lying'**] when you've got a table in front of you [**'table in between'**] or to put a slant on things [**'putting a slant on things'**] than it is when there is not table [**'no table'**] there and you are in an open forum [**'open forum'**]. And I think it's the open forum [**'open forum'**] which made it work [**'effective workshop'**].

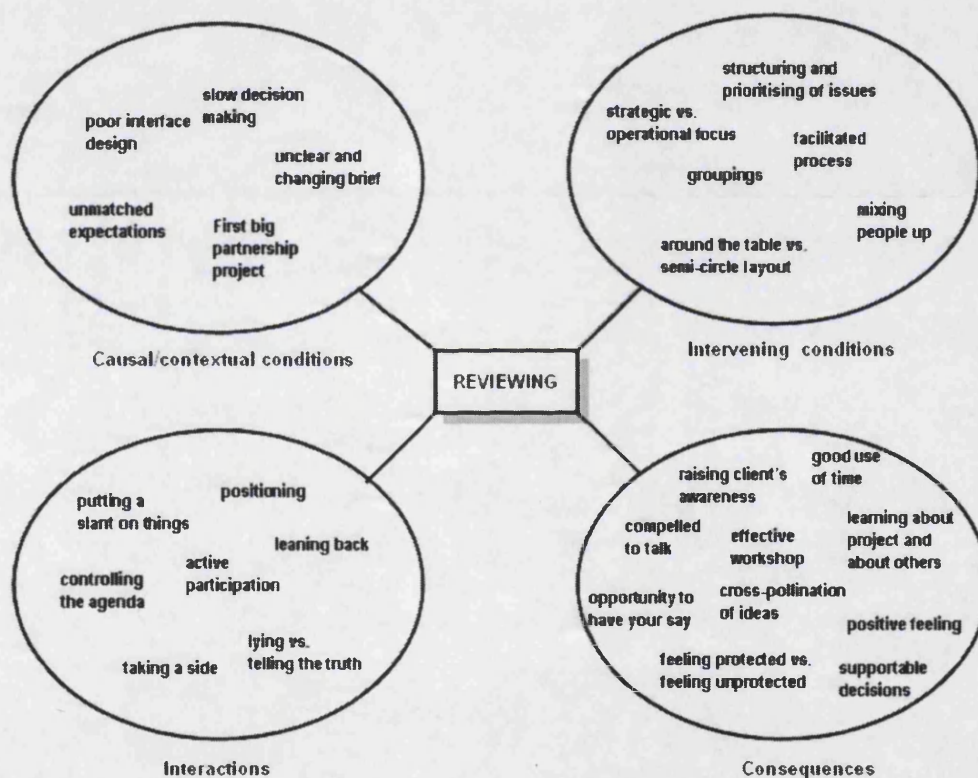
After completing the first-order analysis, a second-order analysis was conducted. While the first-order analysis sought to stay with the data and let the data 'speak for itself' (Strauss & Corbin, 1998), the purpose of the second-order analysis was to develop a higher level of abstraction by grouping and categorising the codes identified during the first-order analysis, and conceptualising how the various categories and their associated sub-categories may be related and labelled. This process, known as 'axial coding' (see Section 5.2), is facilitated by the identification of the contextual conditions in which a category describing a particular phenomenon is situated (e.g. causal, contextual, and intervening



conditions)<sup>53</sup>, the actions and interactions that arise under such a context, and the consequences resulting from actions and interactions.

Figure 7.6 below illustrates the beginnings of the development of the category describing the phenomenon of project review and labelled 'reviewing'. The different elements in Figure 7.6 are arranged using the conventions of axial coding<sup>54</sup>.

Figure 7-6: Illustration of axial coding of the category 'reviewing'.



<sup>53</sup> Conditions are sets of events that create the situations, issues, and problems pertaining to a phenomenon and, to a certain extent, explain why and how individuals or groups respond in certain ways (Strauss & Corbin, 1998). *Causal conditions* represent sets of events that influence phenomena; *contextual conditions* are specific sets of conditions that intersect dimensionally at a particular time and place to create the set of circumstances or problems to which people respond through actions and interactions; and *intervening conditions* are those that mitigate or otherwise alter the impact of causal conditions on phenomena (Strauss & Corbin, 1998).

<sup>54</sup> Following a grounded-theory approach (Strauss & Corbin, 1998), the first-order and second-order analyses were conducted in parallel, rather than sequential, fashion.

The coding and categorising process was facilitated by the use of *Atlas.ti* (Muhr, 1997). This is a software package that consists of a set of interactive, menu driven programs designed to assist in the categorisation and analysis of qualitative data. The software not only allowed complex coding of the data, but also facilitated the manipulation and management of coded statements for further analysis. Interview transcripts were first entered into a word processor, converted into text files, and then entered into *Atlas.ti*. The software's search procedures allowed the researcher to locate all the occurrences of a particular code, set of codes or categories and retrieve them with corresponding original text segments. It also allowed the recording of 'research memos'<sup>55</sup> which were electronically linked to codes or text segments, as well as their retrieval separately or together with text segments. Using multiple code searches it was possible for the researcher to analyse and confirm previously discovered patterns, which served as a form of reliability assessment on the foregoing analyses.

Finally in the third level of analysis, the second-order categories were aggregated into four broader analytical categories or 'themes' to provide a theoretical framework for organising the emergent findings. The first theme consists of the initial conditions of the Whitbread partnership. The second describes the interactions that took place between the partners, and how these were affected by the initial partnership conditions. The third theme focuses on the negotiating processes (and associated supporting mechanisms) in which the partners engaged as a result of performance discrepancies they identified during their interactions. Finally, the fourth theme describes the subsequent adjustments between the partners resulting from their interactions and reviewing activities.

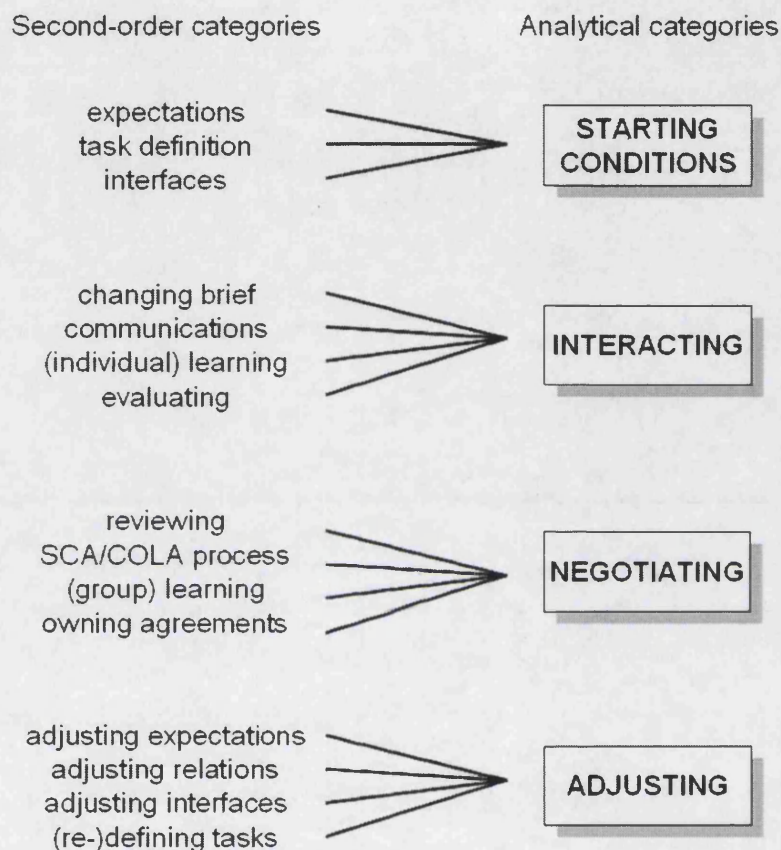
Figure 7.7 below illustrates the relationships between the second-order findings and the four emergent theoretical themes. Each of these theoretical themes will be discussed next. The writing up of these themes was based on a thorough

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<sup>55</sup>Research memos are written records of analyses that vary in type and form, and which represent a running log of analytical sessions (Strauss & Corbin, 1998). In this research, memos included written notes about codes and theoretical ideas developed during the analysis, as well as notes about procedural issues and reminders.

reviewing and sorting of the research memos developed during coding, as suggested by Strauss and Corbin (1998)<sup>56</sup>.

**Figure 7-7: Key analytical concepts generated from the data.**



### Theme 1: Starting conditions

As stated in Chapter 6, the whole UK construction industry was at the time of this research moving away from contractual arrangements towards more collaborative ways of working. When the B-HIVE research started, Whitbread Hotel Company had recently entered into a partnership relationship with their major contractors, project management consultants, and quantity surveyors, to carry out construction

<sup>56</sup> Strauss and Corbin (1998) recommend to read the memos not for detail but for the general sense, so that an emergent 'storyline' can be outlined and subsequently translated into a theory. The validation of the emergent theory is then carried by comparing it to the raw data.

work for their recently acquired Marriott hotel franchise. Whitbread were new to the partnership concept, but many of their partners had experienced some form of partnering elsewhere. Whitbread partners' experience of partnering, however, was based on informal rather than formal partnering relations.

The Whitbread partnership was entered with great expectations by the partners. For Whitbread, partnering was seen as a way to reduce uncertainty about the product. Whitbread wanted to move away from a traditional tendering process in which the least costly tender was likely to be favoured by them, but where the quality of the final product was not always warranted. Whitbread partners also saw the partnering relationship as a means to reduce uncertainty. In Whitbread partners' case, however, the benefit of uncertainty reduction would lie in ensuring steady future work through a continuing partnering relationship. In addition, Whitbread partners wished to obtain a fair remuneration from what they saw was the real 'value' of their work. According to a quantity surveyor from a partner firm:

I hope that what will develop out of partnering is that people really will focus on people's expertise. Yes? And pay them accordingly. So say this guy he...this is what he really does contribute. He can do all these other fruitful things but this is his core thing. And we recognise that we need that. And construction is terrible for saying: "Right, it's going to take a man a day and so I'll pay him £70", or whatever. I always say the analogy of the garden fence I digress but I think it's a good example...You've got a garden fence and it's fallen down and you keep meaning to do it, anyway you get a phone call from the wife one day. And all it is she's had a flaming row with the next door neighbour, who's threatened to punch her if she doesn't get the fence put up. And you're thinking 'this weekend I've really got to flipping do this, I'm going to the football. I know what I'll do, I'll get the local builder in just to set the posts and on Sunday morning I ain't playing golf and I'll just whack the fence in - up'. So you get him round and you're already thinking it's going to take him three-quarters of a day to do that. So you've already said to yourself, it's going to cost me 65 quid. Anyway, he says 100. You say 65 and you end up at 77 - right? And he comes along, puts the posts in and you put the fence panels up and everything's hunky dory. Now what you haven't done in that exercise is you haven't placed any value on what he's doing for you. In so much as if he doesn't put those posts up, I'm not going to get my fence up, or I'm not going to be able to go to the football match this weekend - or whatever. I could have another big row with my next door neighbour. You know, my wife's going to be on my back. For instance if it was a boundary dispute, you'd go and see your solicitor and say I want you to write this - you wouldn't say well that's only going to take you half an hour to write that letter, I'm only going to pay you 40 quid. And that's where the construction industry has got to move itself to. I think. You're looking for value not costing.

These expectations entailed certain obligations on the part of the Whitbread partners. Specifically, they had to be open and honest with Whitbread about their true costs and about what they expected to obtain over and above those true costs. For example, the settling of the project accounts had to be done in an 'open book' format. Most interviewees stated that the success of the partnership relationship depended on being open and honest with each other.

The need for openness and honesty required the development of high levels of trust among the partners. To demonstrate their commitment to developing a trusting relationship with their partners, Whitbread moved away from traditional written contracts and fully documented project specifications. As a partner as contractor put it:

I think, as partnering is new to a lot of companies now, traditionally the industry has got its controls. It has its contracts, it has its employee's requirements it has this, it has its that. Everybody went into that with a partnering understanding. And wanting to perhaps pull away from the written word and the fact that you have a document which tells you everything.

This meant that joint tasks and partnership roles and responsibilities were initially ill-defined, and open to multiple interpretations. This, it will be recalled, was one of the critical issues for the Whitbread partners which was captured both in the pre-workshop questionnaires and in the decision graphs of the three workshops.

Another decision area captured during the workshops was that related to organisational interfaces. At the operational level, the main interface between the partners was the construction project teams. These teams would have regular meetings to review project progress. At the more strategic level, Whitbread had separate periodical meetings with representatives of their partner contractors, partner project managers, and partner quantity surveyors respectively. These meetings were aimed at reviewing both the projects and the partnering process. No forums for cross-discipline partner meetings at the strategic level were in place during the projects.



In summary, data from the interviews and workshop material suggest that the starting conditions of the Whitbread partnership could be understood in terms of three interrelated dimensions: partners' expectations and goals, the definition of the joint task, and the design of organisational interfaces. This set of conditions, as will be discussed below, had a significant impact on the nature of the interactions between the partners, and on the subsequent learning and evaluations made by both Whitbread and their partners about the partnering relationship. These aspects are discussed next.

## Theme 2: Interacting

During the duration of the three projects significant difficulties surfaced. As will be explained below, the data suggests that the above starting conditions affected the way the interactions between the partners in the three projects had unfolded. First, the different partnership teams entered their projects with very broad project specifications. This meant that critical aspects of the project task such as, for example, bedroom model documents, were ill-defined and kept changing throughout the projects. According to a partner contractor:

The client was still, right till the job was finished, working his own way, through his initial brief and the model documents [i.e. model bedroom]. Which is why I think I said at one point in the workshop (that) we did have a situation of a certain type where it did seem that everything we did in accordance with this model document was wrong! If we did it as the document it was wrong, and if we didn't do it as the document it also was wrong or something different. Because people were still trying to make their minds up how it should work.

Second, the partnership interface did not allow for interdependencies to be adequately managed between the partners. Reducing the chances of unclear and changing project specifications would have required the involvement of all partners at the briefing stage of a project. However, Whitbread partners did not have any involvement during this stage. Instead, Whitbread had their own Whitbread-only design committee in charge of decisions about design both as it related to the franchiser (i.e. Marriott) and to the products which were to be sold in the market (e.g. a hotel bedroom, a hotel restaurant, etc.). Indeed, the

relationship with the franchiser was still, at the time of the research intervention, and evolving one. According to a Whitbread property development manager:

(Researcher): And so presumably a big part of of your job is actually getting these notional Marriott standards realised into 'on the ground' design decisions...

(Interviewee): Yes.

(Researcher): and you spend a lot of time talking to Marriott? To try to get them to articulate what they want?

(Interviewee): Well it's a changing relationship because in the early days, the franchiser-franchisee relationship is different or was different to the way it is now and no doubt the way it will be in the future. So there is a sort of an understanding that has to develop throughout a period of time on what the real rules are as opposed to you know theory and practice. I think any franchise relationship has to be like us.

(Researcher): In which ways is different now?

(Interviewee): Well it is a bit like learning to pass your driving test: to drive a car is one thing but driving on the road is another.

As the relationship between franchiser and franchisee was a new and evolving one, Whitbread were having difficulties in understanding the requirements of the former, which meant that they were unable to sign off their designs and send the relevant information to their partners on a timely basis. In other words, Whitbread were too far apart in their ways of doing things to understand their partners' needs and connect to and communicate with their partners effectively.

The problems caused by ill-defined and changing project specifications were exacerbated by the lack of a clear definition of partnership roles and responsibilities. Early in the partnership it became apparent that some aspects of the partnership arrangements were causing difficulties to the partners. In the initial set-up, architects and designers were subcontracted by the partner contractors. This meant that both architects and designers had limited flexibility to operate and respond to Whitbread's demands, which caused much frustration to all parties. According to the one of the architect subcontractors:

The project is in two parts. There's the building contract and the fit out, the interior design which we were interior designers for as well as architects, but the client (Whitbread) elected to do the equivalent of a design and build contract,

which means that the builder pays a professional team. So if the builder says to me, we're not doing that, there is nothing I can do because he is my paymaster. Now, most builders, and I include [the contractor] on this job, are not really that interested in the colour of walls. You've got the skin and all the rest of it painted whatever colour. But that is the bit that everybody sees, that is the bit the punter sees, the occasional visitor sees, the management see. They are not interested that it's on piles and on it's on this and it's air conditioned. But if the air conditioning is not working, everybody wants to know why. Now on that side there were 2 or 3 major issues, like for instance the whole air conditioning plant was changed, and we as architects were not given any drawings, now this is just a breakdown in communications for whatever reason. But that resulted in instead of being 6 little pieces of plant on the roof (we designed the roof like that in sections, so as you're looking at it pieces of plant right here, you can't see it ...this is the main entrance to the leisure complex.) We arrive one day and there's one big piece of plant on the roof that everybody could see. Now I'm not in any position whatsoever to say to the builder what the hell have you done that for, (be)cause they've employed that M&E person, sub contractor to get on with what he wants, because it's the cheapest way of doing it. I'm left having to detail a drawing or something to hide that. Then people (e.g. Whitbread directors) say why have you let that happen? Why have I let that happen? I haven't let that happen, but there's nothing I can do about it.

In addition, in the partnership set-up the contractors had the responsibility to manage Whitbread's preferred suppliers (called 'directs'), but the latter's payment came from Whitbread. This meant that the contractors had little power to manage third party performance which, it may be recalled, was one of the key decision areas surfaced during the SCA/COLA workshops (see Table 7.1). According to a Whitbread property development manager:

Third party performance picks up basically the way Whitbread works. We have our project team and then Whitbread's procurement side they obviously have a buying department which does all group corporate deals and so third party performance could be our direct sanitary ware supplier, our direct TV supplier, our direct carpet supplier. It could also mean people like seller services which is Whitbread's bar people that connect the sellers to the bars. That's an independent. Whitbread's systems could be like the till locations and the micro systems that go in those till locations, but it could also be the contractors/subcontractors as well.

What they do is they turn up, and the issues that come up, they turn up, you know, "Sorry we don't deliver to Scotland on a Thursday, we only deliver on a Tuesday so you've gotta take it Tuesday." Well, we don't want it Tuesday we want it Thursday. So, you know, and they say alright but what happens then is that they don't turn up till Tuesday. And you wanted it on Thursday...and when they turn up they leave it at reception or they don't unpack it or they don't fix it or they come in and haven't got the right health and safety requirements and they leave a mess, you know, and the contractor is saying "Well, if it was my guy I would have..." and their biggest bug bear is that we under the contract or the project set up...not the contract...the partnership, we give them the responsibility for managing our directs, so don't come crying on our shoulder if you are late because our direct supplier hasn't performed...it's your job to manage them. (The contractors) say "Well, how do we manage them when we are not paying them?...because you tell us we've got to use them and you tell us that we are

responsible for if they muck up it's our fault but we've got no clout."

Third, expectations between the partners suffered. Each partner entered the partnership with a set of explicit expectations. Some of these expectations stemmed from the industry context they entered the partnership from. Each partner also had expectations about the behaviours of the other partners, and used their interactions with each other as a way to gather clues to validate or challenge initial expectations. For example, partner contractors started to raise concerns about Whitbread's inability to recognise the efforts over the projects in agreeing the level of return achieved by the contractors. According to one of the partner contractors:

"I mean, we are still concerned about the level of profitability that the job has generated. By and large our company has done a very good job in producing a hotel extension and all that goes with it. The client has also had the flexibility to change his mind very often. The level of return that my company has secured for that job is not acceptable. It's not... effectively the job has been undertaken for a loss. So in a partnership scenario there's no way we should make a loss. But because the job it's actually only made a very, very small percentage of what we called margin, that very small percentage margin it's actually not even covered the overhead to run the job. So effectively the job has run at naught percent. [It] has run as broken even right across the board...which in real terms is a slight a loss."

Fourth, as their interactions unfolded and the partners became aware of discrepancies from expected processes, the partners learned about each other, and about each others' organisational routines. In the case of the Whitbread partners, as they discovered the demands of the project tasks and Whitbread's ways of working, they questioned Whitbread's ability to work sufficiently closely with them to perform the project tasks successfully. This was particularly salient with regards to information flows throughout the project. According to a partner consultant and a partner contractor:

(Partner consultant): ...many times we come on to the site and we are given something, there's no negotiation, we are just given it in a form that you have to take it and work with it. And I think part of it was we were giving information back to the client to say "yes you gave us along the information but really we didn't have enough or we had too much or it could have been done differently or it should have been tied down differently."

(Partner contractor) I think because he was involved in a different one, he looks at stuff from a different point of view. Look at the information procurement. We are

more...much keener in getting a link directly into the client or multi-directly into the client to establish the information we are asking for, that the information we are getting is correct, that it has been Okd by everybody that needs to have an input into it. And the way you were just putting it there was a nice way, a subtle way of saying that there are some things in which the client needs to get its act together!

In summary, the ill-definition and changing nature of the project task, the lack of clear partnership roles and responsibilities, together with the slow and inefficient response by Whitbread to the need of their partners for effective coordination led to mixed evaluations of the partnership relationship, and to a recognition of the need for jointly reviewing both the projects and the partnership process. These reviewing activities are discussed next.

### Theme 3: Negotiating

Evidence from the interview data suggests that there was a clear need to develop a formal partnership mechanism that could serve as a vehicle for the partners to share their learning experiences of individual projects and of the partnership relationship, increase levels of understanding and trust, and develop commitments to put the lessons learned into practice. According to the Whitbread property development manager:

So what we've done is all part of a jigsaw and I think the post-completion review is a big part of the jigsaw in moving the partnership forward. Because partnering is about honesty, trust, mutual objectives. And the only way you can understand the mutual objectives and the honesty and the trust is by reviewing how good you were on your last project and how can you get better at doing the next one. And I think they do play a key role in...If our partner contractor say "sorry Whitbread, you know, we've done 5 projects for you now and we've not made a penny on the last two and we've lost on the last three", you know, they'd say "well partnering...it isn't for us". You know. And really, hopefully, although it was really the area that was avoided in Glasgow, in the future ones they should be able to, you know, we've started hitting the things that could make them get better, make them make more money, if we can control our directs properly so they don't have to clean up for them and they do deliver on time, then their profit should get better. And if we can sort out our briefing so we are not changing the objectives every two minutes, again, they should be able to get better profit out of it, and in turn that would bring the cost down. So everybody gains from it. Not just them, not just us. And I think the only way you can do that is by having the post-completion reviews to understand where there is area for improvement.

The need for such a formal reviewing mechanism resulted from the perceived ineffectiveness of the existing partnership interfaces. All partner interviewees stated that they wanted a forum which would be participatory, and which would allow them to raise awareness of the difficulties all parties were experiencing and facilitate the development of action plans. For example, according to a partner contractor, in a successful project review:

Everybody can shake hands at the end of it feeling they had their say...everybody has been able to say exactly what they wanted to say and that the fundamental issues are being addressed and there was a plan of action. That's a success. There is a challenge and there is a result...but the fact that you get people talking and not writing, get people face-to-face talking, that's the most important thing.

The development and implementation of a project review process, with its focus on integrating individual learning and facilitating the implementation of learning products, was a direct response to these difficulties

As may be recalled, a core element of the project review process developed and implemented within the Whitbread partnership was the SCA/COLA supported workshops (see Chapter 6), three of which were conducted during the B-HIVE study (see Section 7.1.2). In the post-workshop interviews participants provided an interesting evaluation of the value of these review workshops within the negotiating stage of the partnership process. First, all participants found that the SCA/COLA workshop process and format was highly participatory, and which in turn significantly contributed to the high levels of supportability and ownership of the commitments achieved during the workshops. Participants also expressed that the discussion format and workshop layout reduced the chances of them 'taking positions' during the reviews. Typically, construction project meetings are driven by highly structured agendas and are led by the project manager. They are held around a table with each participant having a large number of papers in front of them, but each agenda item typically only involves two or three of the people present. Participants stated that the SCA/COLA discussion format made them felt comfortable to become involved and express their views freely. In addition, they

observed their views being taken into account and adding to the richness of the discussions.

Second, workshop participants expressed the unanimous view that SCA/COLA helped them to better organise their project reviews. This was because they were able to share and cross-pollinate their different perspectives, identify and understand the relationships between the different issues and areas for choice, and obtain a broader picture of the problems confronting the partnership. Most participants described the representation, structuring and prioritisation of the issues as transparent, flexible, and efficient, and that these aspects of problem structuring helped group communication and to get 'buy-in'.

Finally, those participants whose role within the partnership was strategic rather than operational (i.e. those who were not part of the project teams dealing with the day-to-day management of the projects) indicated that they had learned both from each other and from the projects, and that this learning was a key trigger for the actions that followed. The following examples illustrate the extent to which the learning achieved with SCA/COLA was disseminated to other projects within the partnership. A £4.6 million, 64-bedroom extension at Dalmahoy Marriott Hotel & Country Club in Edinburgh, was planned to start in January 1999. Participating in this project were Whitbread and Laing, who had taken part in the Hollins Hall review. Interviewed by the researcher, representatives of both organisations expressed that what they had learned at the Hollins Hall review was subsequently applied to the planning of Dalmahoy, even though there were no Dalmahoy-specific actions resulting from the Hollins review. Moreover, the same SCA/COLA workshop format used in Hollins was used at a phased review of the Glasgow Marriott Hotel, and facilitated by the Whitbread representative who had participated in the Hollins review. This occurred without any prompting or supervision from the researcher or any other member of the B-HIVE team. These examples illustrate that the partners had a strong ownership of the processes and products of SCA/COLA, saw the method's usefulness, and applied what they had learned.

To summarise, the following evaluation themes were derived from the interview data: highly participatory process; effective problem structuring process; high supportability and ownership of workshop commitments; and learning. Certain aspects of these themes (e.g. participatory process), it may be recalled, had already been identified through the analysis of the post-workshop questionnaire responses (see Section 7.2.1).

Following each of the three SCA/COLA reviewing workshops, adjustments in the partnership relationship ensued. These adjustments are discussed next.

#### Theme 4: Adjusting

An emerging theme identified in the interview data suggests that after the SCA/COLA-supported reviews the partners had developed heightened expectations, as illustrated in Table 7.5 below.

**Table 7-5: Excerpts from coded data suggesting adjustments in partners' expectations within the analytical category 'adjusting'**

"Well you've also got to realise that there's also, you know, we work a very flat structure. This is just part of the, you know...my role...this is just part of it. If I've got 10 multi-million pound projects on site, I can't do a post-completion review (PCR) for every project. I can only choose...I have to pick the ones that we need...what my ultimate aim is to that all my appointed project managers will be out to do versions of the Glasgow themselves." (property development manager)

"I think from now on each new Marriott hotel project for WHC, we will launch them formally so everybody buys into it from the start. I wouldn't call it a workshop as such but I'd say it's a meeting where we all get together, express a view, and basically form a collective judgment of what's needed to make the job a success both, from an operational point of view and from a "no surprises, delivery and cost" point of view as well." (partner contractor)

"I think we moved on even from then to now in the relationship with the partner sub-contractors and in the understanding of the quality of the service that people aspire to. It takes quite a long time to move from competitive tendering to a long-term relationship where people want to work together....I think (the workshops) lent substance and credibility to the whole thing. Because there are a lot sceptics. There are a lot of people who are driven by the bottom line. And a lot of the things we are involved with are more cultural. But they happen to result in a better bottom line eventually. But it's not as measurable. So I think (the workshops) do a lot to support the right objectives for the people who are committed to this direction. (property development manager)



“We are still going on...You know, it’s great to be involved. I love working with Whitbread. I really do. I enjoy it. The most enjoyable company to work with.”(partner contractor)

Another theme identified in the interview data suggests that the reviewing and adjusting activities appear to have contributed to a significant change in the nature of the partners’ relations, as illustrated in Table 7.6 below.

**Table 7-6: Excerpts from coded data suggesting adjustments in partners’ relations within the analytical category ‘adjusting’**

“I saw that as a benefit of partnering and I saw the beginning of a paradigm shift. You know, LAING has got millions of pounds worth of business with Whitbread. Now you can spend 6 months haggling over 100 grand which to you and me sounds a lot of money but in the big picture is not. Or you can take that big picture and say we’ve screwed up here in terms of...it cost us £100-£150 thousand but we’ve learned some lessons. We don’t want to damage the relationship because we can lose a lot of business. Let’s look at it positively. And it was very very reassuring... That was a highlight.” (hotel operator)

“And I think something that I preach from this and the reason for really sending this out as I did is that, you know, that the Glasgow project and the HH project, yeah there were things that we could have done better but at the end of the day what two terrific projects they’ve got! And if we’d done it any differently if we’d not done it through partnering then, you know, the chances were that they wouldn’t have finished within budget, that they wouldn’t have finished on time, we would have been, you know, still battling the ping pong ball across the table and whose fault things were and who should pick the bill up, and I think that what we need to do is start singing our praises a lot more.” (property development manager)

Perhaps in particular there is some evidence in the study that SCA/COLA may have contributed to facilitating mutual accommodations and high levels of commitment to the partnering relationship. For example, according to the Whitbread property development manager:

One good thing that I think came from the whole process is that literally probably a month and a bit ago we agreed the final [Hollins Hall] account with [the contractor] which normally drags on for months and it’s “Well I think it should cost this”. We think it should cost this...and you are playing ping pong across the table, you know, “Did you really do that?”, “Wasn’t that included or was it excluded?” At Hollins Hall I arranged a meeting to really clear up all those outstanding snagging items. “Have they all now been addressed?” Most of them had but there were a couple of things that, well “is that really snagging or is that extra?” The normal stuff. And so we said right we are going to have one more meeting...we had the meeting and in the morning we laid all our cards on the table. I actually put on a flip chart “this is the budget” and [the contractor] said

“Well, this is what we think we should be being paid”. Our project quantity surveyors said: “This is what we think you should be paid”. Because is all open there and within literally three hours...then we went through a...what’s an issue that is outstanding, what’s genuinely extra , how can we pick this up because we wanted to deliver this to the hotel to finish the project, can we do it, and at the end of the day by lunch time we agreed a final account. And I think that, part of that came out because of the way we handled the post-completion (review), the way the whole project had been. If that was traditional type, there was no way we would have agreed the final account... So at the end of the day within a meeting and the way the relationship had evolved, because of the partnership, because of the post-completion review.

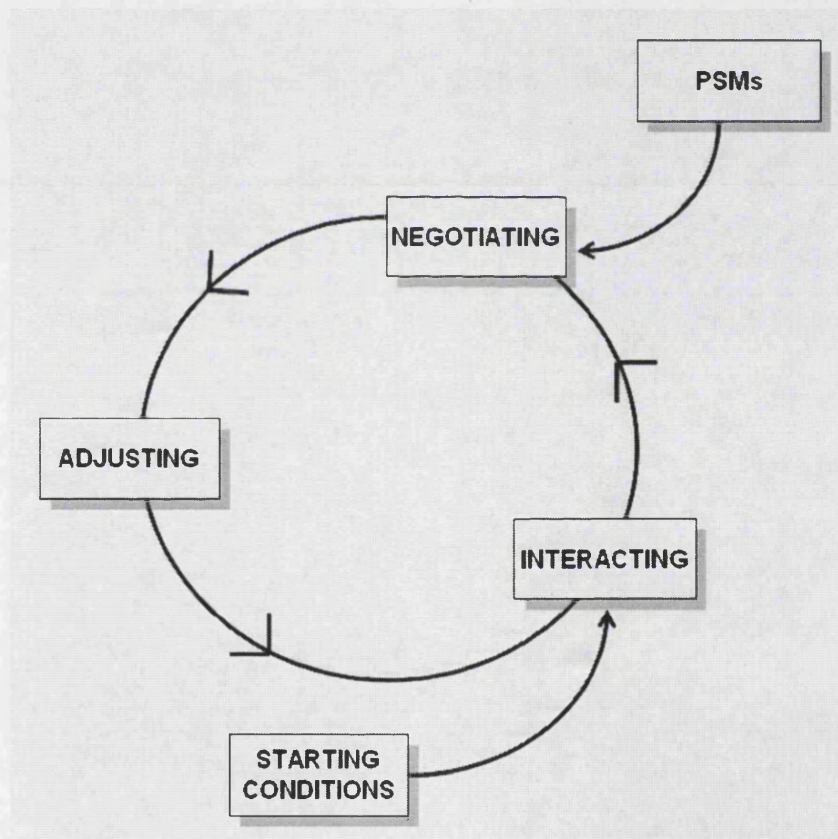
After each of the SCA/COLA workshops, Whitbread and their partners knew what they wanted to do and had ideas about how to do it. The adjustments which took place among the partners during the period of the B-HIVE study included the development of new communication interfaces for the partners (e.g. partners were to sit on project reviews and meetings other than those in which they were directly involved); the empowering of contractors in relation to Whitbread’s suppliers (e.g. by withholding payment of suppliers until the contractors were satisfied with their performance); a tighter definition of briefing documents (e.g. hotel bedroom models were developed and became available to Whitbread partners); and the development of a new project management process for all partners with SCA/COLA as a key element.

A follow-up conversation with the Whitbread Hotel Company’s property development manager confirmed that, two years after B-HIVE, SCA/COLA continued to be used within the partnership as part of its project review procedures within the partnership. SCA/COLA became part of the process manual which every project manager should follow, and Whitbread extended its use from their Marriott Hotel projects where it was piloted in B-HIVE to their much larger programme of Travel Inn renovations.

Figure 7.8 below presents an emergent model of the partnering process which uses the theoretical themes identified above as its building blocks. In summary, this model conceptualises the Whitbread partnership as a learning cycle. It starts with a set of starting conditions determining the nature of the interactions between partners. These starting conditions could be most clearly understood as

comprising partners' expectations and goals, a definition of the joint task, and a design for the interface between the partners. The joint activities embedded within partners' interactions leads the partners to learn about each other. This learning leads partners to evaluate the partnership according to three assessment criteria: efficacy, efficiency and effectiveness which, in turn, leads partners to (re)negotiate their relationship using appropriate support mechanisms (e.g. PSMs), and subsequently adjust their future interactions by moving away from their starting conditions.

**Figure 7-8: Emergent model of the partnering cycle.**



A key element in the partnership cycle model described above is the learning that takes place during both the interactions between partners and the negotiating activities in which they engage. As discussed above, the configuration of the starting conditions leads the partners to learn about ongoing partnership processes. Two types of learning can be distinguished here. On the one side, the partners

learn about the nature of the problems confronting them. On the other hand, each partner learns about the behavioural changes they perceive are needed to make the partnership work. The aim of formal review mechanisms such as the SCA/COLA workshops is to collate and integrate the learning achieved at the partner level, and foster joint learning between the partners. The model of Figure 7.8 suggests that it is the achievement of this type of integrated learning through reviewing mechanisms that leads to the institutionalisation of partners' commitments during the adjustment phase of the partnership cycle. During the B-HIVE study, the adjustments which took place in the Whitbread partnership were aimed at reinforcing and improving the partnership relationship. It would not be unreasonable to postulate, however, that a lack of integrated learning would have made the sustainability of this relationship extremely difficult, eventually leading to its termination. This hypothesis could in principle be further investigated using the model of Figure 7.8 as an initial theoretical framework.

Finally, the adjustments which took place within the Whitbread partnership are an illustration of what in the literature is referred to as 'inter-organisational learning' products. *Inter-organisational learning* involves organisations engaged in collaboration producing a set of inter-organisational rules and routines that are partly separated from the intra-organizational rules and routines of each of the parties (Child, 2001; Ciborra, 1991; Hamel, 1991; Lane & Lubatkin, 1998; Miner & Andersson, 1999). This raises a claim for PSMs which has not been considered previously in the PSM literature: that another benefit from the use of PSMs with collaborative multi-organisational groups is inter-organisational learning. This result is clearly worthy of further investigation.

### **7.3 Evaluation of the research findings by the researcher**

It may be recalled that it was the researcher's intention to investigate empirically the usefulness of PSMs in assisting actors who engage in multi-organisational collaboration to address a problematic of common interest, and reach joint agreements with respect to it. In particular, the researcher wanted to explore

whether PSMs in general, and SCA/COLA in particular, can improve the quality of the dialogue in which collaborators participate, as well as facilitate accommodations in their power balance. This section discusses to what extent the research findings which resulted from the use of SCA/COLA with the Whitbread partnership support these propositions.

Before we begin with our analysis, it is worth noting that an arguable deficiency in the research process is that the work reported in our study did not go through all the phases of the method. It might be thought that this factor throws a shadow over the apparent support for the usefulness of SCA/COLA in the context of collaborative partnerships as evidenced in this research. Nevertheless, because of the time limitations which are characteristic of organisational life, a part of the method may often be all that a PSM facilitator is able to apply. The potential for sections of methodologies to be used separately has already been recognised in the multi-methodology field (Mingers, 2000; e.g. Mingers & Brocklesby, 1997; Mingers & Gill, 1997).

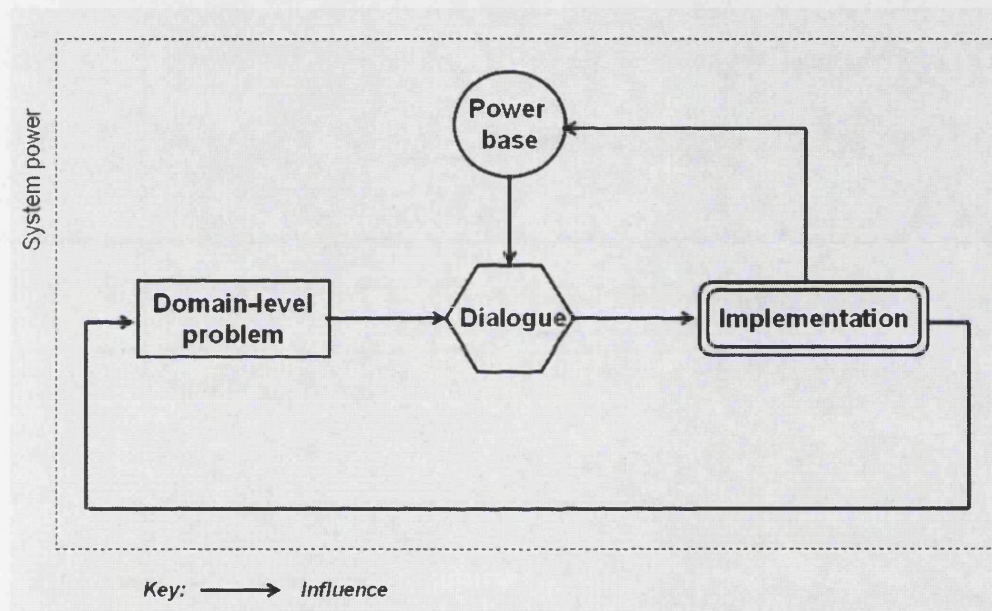
The discussion in this section is organised in three parts. In the first, an evaluation will be attempted in terms of the conceptual model of collaboration developed in Chapter 3. In the second part, the appropriateness of the use of PSMs in the study will be examined. The nature of the problematique addressed in the study and the effects of the partnership context and choice of facilitator will be discussed here. The final part discusses under what circumstances and to what extent the intervention experience can support an argument that PSMs are suitable for use with other multi-organisational collaboration teams.

### *7.3.1 Evaluation of the original conceptual model and hypothesis*

The model developed in Chapter 3 was intended to help understand the various factors involved in a collaboration process. An overview of this original model is reproduced in Figure 7.9 below. The purpose of this research and therefore the reason for using a PSM-based methodology in the Whitbread construction

partnership is to explore the ways in which PSMs can contribute to multi-organisational collaboration. The potential role identified for PSMs, it may be recalled, was in relation to the dialogue element of collaboration. It is therefore appropriate to inquire to what extent the changes observed or experienced which have been explicitly articulated by participants or observed by the researcher indicate a tendency towards improvements in the quality of the participants' dialogue.

**Figure 7-9: Reproduction of original conceptual model of the partnership process.**



In terms of the quality of dialogue, it was proposed in Chapter 4 that PSMs had the potential to improve the four aspects of dialogue which guarantee quality: comprehensibility, trustworthiness, rightness and truthfulness. The following discussion is based on an analysis that focused on 'quality of dialogue' as an analytical category emerging from the data. For illustration purposes, Table 7.7 below shows excerpts of coded interview data which link particular characteristics of SCA/COLA to the quality of dialogue. In Table 7.7, two examples of first order codes associated with the category 'quality of dialogue' are given, and the corresponding coded excerpts are organised by second order codes that correspond to the four aspects of quality of dialogue mentioned above.



With respect to *comprehensibility*, there was evidence in this study that the participants viewed SCA/COLA as a transparent mechanism which helped them to understand each other, and to structure, clarify and learn about the issues confronting the partnership. This is illustrated by the coded excerpts shown in Table 7.7.

With respect to *truthfulness*, the main source of data for the SCA/COLA applications was the participants' knowledge and expertise, their experience of the projects, and their beliefs and expectations about the ongoing partnering process. Participants stated that this type of data was appropriate and useful for the purposes of the review workshops. Also, they all agreed that these data were openly discussed and jointly examined by all parties. Furthermore, as illustrated in Table 7.7, the data suggest it was the openness forced upon participants by SCA/COLA which reduced opportunities for deliberate manipulation of data.

As stated in Chapter 4, claims of legitimacy or *rightness* during dialogue are aimed at mobilising the consent of actors, and can be based on either knowledge/expertise or the authentic representation of interests. The coded excerpts of data displayed in Table 7.7 help to illustrate that the issues elicited in all the workshops were seen by participants as valid and legitimate. However, during the workshops, the issue of increasing the partnership membership through downstream partnering was repeatedly raised without being taken forward. Indeed, no decisions about involving other sub-contractors and direct suppliers were taken at the time, but all the partners expressed during the interviews that this was an issue which they wanted to consider seriously at some point in the future.

Table 7-7: Matrix display showing excerpts of coded data regarding the analytical category 'quality of dialogue'

Analytical category: QUALITY OF DIALOGUE				
	Second order codes			
First order codes	Comprehensiveness	Truthfulness	Rightness	Trustworthiness
Transparency & problem structuring	<p>"From all responses you've lifted the various items, put them together, you said it came out like this, dumped it on us, we sat down and we made a decision...I can find no problems with that." (partner contractor)</p> <p>"I think so because I think at least when the issues came out and they were up on the flipchart at least everybody concentrated on that particular issue. Yes I think it did [work for me]. It kept it focused and kept people in unison. Yes." (design subcontractor)</p> <p>"...I think we needed a direction in terms of making it structured. I felt it was fine." (property development manager)</p> <p>"Coming with a list of items that everybody has put up together in effect, let's run through that and select as a group it's a good way of doing it. It also gives the opportunity, by running through the list, things will stick in your head." (partner contractor)</p> <p>"I think those points which were brought up were all valid. I think that it certainly served to appreciate other people's difficulties within the process. And I think those items - or those points - that were chosen to go forward with were valid." (partner consultant)</p>	<p>"I think that the recommendations that came forward were legitimately supported because everybody signed up to the issues we needed to look at and everybody was a party to the information that was put forward. There wasn't anybody that was crying out in disagreement anywhere." (partner contractor)</p> <p>"I think is very difficult to know categorically you were right or wrong but I think you made a very good stab at the right issues." (property development manager")</p> <p>"The way that those issues were correlated into groups, was open. So I don't see that there was any great issue there" (partner consultant)</p> <p>"On the day? Well obviously the agenda and the areas of focus had been derived from feedback received from the questionnaires. That struck me as fairly straightforward. I think it fell into about 4 chunks didn't it....Yeah. That seemed OK." (hotel operator)</p>		<p>"It was good in as much as the team were very much of one mind in terms of the things that went right and went wrong. And were constructive about the things that had gone wrong and were keen to learn ways to improve those." (design subcontractor)</p>



<p>Openness &amp; participatory/ adaptable/interactive processes</p>	<p>"When we did the brainstorming, what happens...someone said 'Oh I have an issue with directs', for example, and someone says 'Oh yeah, they were...' and this sets other people to say "well he's right or he's wrong"...(partner consultant)</p>	<p>"The points made were valid and adequately discussed." (partner consultant)</p> <p>"Everybody had a through discussion or through sort of sticking their post-its, had an opportunity to put forward what they felt were the critical and the key issues. So you had an opportunity to be either vocal or anonymous about what you were saying" (partner contractor)</p>	<p>"I did appreciate that obviously you did change the direction it was going at HH to cater for the issues that we had, like the snagging issues, because they were at the top of the agenda at the moment" (property development manager)</p> <p>"Certainly in terms of the timing it was driven forward but these things need to be driven forward. I didn't feel compromised by the way that it went." (partner contractor)</p>	<p>"In terms of the results that we had I feel that they were sounder because they were discussed by all parties and all parties signed up to them and jointly signed up to them as well." (partner consultant)</p> <p>"I think the workshop scenario works far better because it's less adversarial. You know, you can put your point forward...it gives people the ability to say, 'well look, looking back with hindsight (and not sitting across the table) we probably could have done this better, and if we had the time we \would have done it a different way'" (partner subcontractor)</p> <p>"The meeting itself did, the way it was set up, I liked the format, the way it was set up. No tables. The open horseshoe which cuts down on some of the barriers. I think that every party that was there was given the opportunity to air their views in one way shape, form, or another." (hotel operator)</p>
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Finally, with respect to *trustworthiness*, and as illustrated by the coded excerpts displayed in the last column of Table 7.7, there was evidence in the study that the highly participatory and interactive nature of the SCA/COLA workshop process and format secured the participants' support for the agreements attained during the workshops. The high level of commitment to the joint agreements reached by the partners, and their subsequent implementation can be interpreted as indicative of the creation of shared meaning (one of the key intermediate outputs of the dialogue process – see Figure 3.2) about both the issues confronting the partnership and the steps needed to address them, and of improvements in the levels of trust among all parties.

The above are all indications that improvements in the balance and quality of the dialogue between the workshop participants were achieved during the B-HIVE study.

As already stated, the purpose of this research is to explore the ways in which PSMs can contribute to multi-organisational collaboration. Power is another element of collaboration in relation to which a potential role for PSMs was identified. In terms of power, it was proposed in Chapter 4 that PSMs also had the potential to facilitate mutual accommodations in the power balance of collaborators. The following discussion focuses on to what extent the changes observed or experienced which have been explicitly articulated by participants, or observed by the researcher indicate a tendency towards accommodations in the power balance among the study participants.

In terms of power, an asymmetrical power relationship between Whitbread and its partners was evident from the early stages of the partnership. Whitbread potentially represented a continuous source of large-scale work for their partners and sub-contractors and, therefore, made them a very powerful player within the partnership. Indeed, one of the main concerns at the beginning of the B-HIVE study was whether the application of SCA/COLA would only help to legitimise

Whitbread's decisions rather than support genuine accommodations between the parties.

The research experience as a whole tends to demonstrate that accommodations in the power balance of the participants and their constituent organisations did take place as a result of the use of SCA/COLA. Workshop participants expressed the view that the work carried out with SCA/COLA helped them improve their understanding of the barriers and difficulties affecting both the partnership and the partners, and to have clearer views of their options for actions. Some of these options relied on Whitbread's decisions, and Whitbread showed strong commitment to their implementation during and after the workshops. These are all indications of accommodations in the power balance of the partners. Indeed, the research experience seems to indicate that SCA/COLA increased actors' awareness of the advantages of mutual accommodations. Whether PSMs in general also have the potential to achieve this effect is worth of further investigation.

Insofar as the experience in the Whitbread partnership has tested the conceptual model developed in Chapter 3, that experience supports the model as a reasonable representation of a collaboration process. The conceptual model can be further elaborated by incorporating the emergent theoretical categories identified from the research data. A fuller test of this enriched conceptual model would, of course, require further experiences in which aspects not present in this study were brought into play. A cycle of generation of new theoretical categories would then continue until 'theoretical saturation'<sup>57</sup> (Glaser, 1993; Strauss & Corbin, 1998) is achieved.

### *7.3.2 Appropriateness of the use of PSMs in the study*

In Chapter 6, it was agreed that the nature of the issues confronting multi-organisational partnership construction teams seemed a promising area for the

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<sup>57</sup> A theoretical category is 'saturated' when no new information seems to emerge during coding. That is, no new properties, dimensions or relationships emerge during analysis (Strauss & Corbin, 1998).

application of PSMs. It is therefore appropriate to examine whether PSMs in general, and SCA/COLA in particular, indeed proved appropriate for addressing the problematique confronted by the study participants. If the problematique in the B-HIVE study did not exhibit the characteristics for which PSMs have originally been developed, then a non-PSM approach could have been more appropriate and have achieved the same effects. In this section, the following issues will be addressed: level of complexity and uncertainty of the problematique addressed in the study; partnership specific conditions; and facilitator effects.

The problematique of the Whitbread partnership in fact appears to have exhibited low levels of complexity and uncertainty, which is contrary to what is the normal sphere of application for PSMs. Nevertheless, the application of SCA/COLA was regarded as successful by most of the study participants on a whole range of attributes (see Section 7.2.1). This apparent contradiction can be resolved by providing higher specificity to the notion of complexity. For this purpose, it is possible to distinguish both a behavioural and a structural aspect of complexity. *Behavioural complexity* can be thought of as derived from the presence of multiple actors with multiple and (sometime) conflicting interests, with different power bases, and where uncertainties about guiding values (UV) and related agendas (UR) are present. *Structural complexity*, on the other hand, can be thought of as related to aspects such as the number of issues constituting the problematique, their interconnectedness and dynamic behaviour, and where strong uncertainties about the environment (UE) are present. Following this categorisation, the nature of the models developed in the three workshops and of the action plans which resulted from them suggest that the problematique of the Whitbread partnership was characterised by high levels of behavioural complexity but low levels of structural complexity. Viewed in this light, the use of SCA/COLA can indeed be seen as appropriate for the problematique at hand.

Some of the reported effects in the B-HIVE study could have been due to the use of SCA/COLA with a particular form of collaboration such as partnership. It has been argued that most if not all PSMs work best, or only, under situations in

which there is an absence of fundamental conflict, or where there is a robust agreement upon mechanisms to negotiate or mediate such conflicts (see, for example, Jackson, 2000). Such consensus situations are typical of organisational teams working collaboratively to alleviate a problem of mutual interest, which have traditionally been the subject of PSM interventions. Consensus situations can also be found in the multi-organizational context where:

- (1) the organizations each desire the performance of some joint task which can only be attained through cooperation;
- (2) the organizations supply services to each other in a mutually reciprocal way on which each of the participants depends; or,
- (3) there is a dominant organization, with which, for one reason or another, the other organizations wish to stay on good terms.

A multi-organisational collaboration process has the particular characteristic that the participant organisations have agreed to come together to resolve certain issues of mutual concern through dialogue rather than through action and reaction. Where none of conditions (1), (2), or (3) apply, various forms of negotiation may nevertheless occur. However, without the consensus assumptions (1), (2) or (3), there is no strong expectation that PSMs will be of assistance to the parties involved.

Partnerships are a particular case of multi-organisational collaboration in which the need to interact together is of a continuous or recurring kind. There is therefore some form of institutionalization of the relationship which, as already illustrated in the case of the Whitbread partnership, includes formal or informal interface structures for interaction. It is not unreasonable to see the existence of partnership arrangements as an indication of a basic, if possibly circumscribed, compatibility of purpose. By extension it could thus be argued that partnerships are in principle an appropriate setting for the use of PSMs: a setting of multiple stakeholders within a context of broad agreement which needs to be made operational.

As already stated in Section 7.2.2, SCA/COLA continued to be used beyond B-HIVE within Whitbread, as part of Whitbread's project review procedures within the partnership. This raises the further question of whether partnerships could be a fruitful setting for the embedding of PSMs as standard routines. For this we need to consider why organizations, whether businesses or in the public domain, choose to embed certain organisational practices. It can be argued that this is done to avoid the necessity, for recurring situations with a common structure, to argue out from first principles on a repetitive basis either what is the correct action (e.g. by a reliance on calculative decision rules) or what is the correct procedure for reaching decisions (see, for example, Chandler, 1977; Porter, 1992).

Intra-organisational teams make considerable use of embedded calculative decision rules to free-up the time of individual managers. Often these are literally embedded in software, and sometimes automatically triggered. The need to embed interactive procedures whose rationale is the adjustment of behaviour of at least semi-autonomous agents is less evident for these teams. These procedures, if part of the organizational rule book, might be seen as undermining the hierarchical, chain of command authority on which virtually all economically significant organizations formally depend. Embedding of procedures in general, and of PSMs in particular, makes more sense in partnerships. Here the legitimacy of the hierarchy does not exist to be threatened. Furthermore, overt and vigorous turf wars between rival managers may be tolerated within an intra-organisational team precisely because it is held within an overall framework of authority; but in a partnership such struggles could threaten or even destroy the joint enterprise. Procedures which can provide an arena for the containment of what would otherwise be seen as attempts at a naked exercise of power may, under certain circumstances, be a necessary condition for the maintenance of the partnership ethos.

These conditions help to explain why the partnership reported in this research proved to be such as receptive environment for the application of SCA/COLA<sup>58</sup>.

Finally, it is worth considering whether some of the reported effects in the B-HIVE study could have been due to the choice of facilitator. It is never possible to be sure what would have happened if an alternative intervention approach to SCA/COLA had been used or a different facilitator had run the workshops. As already stated in Chapter 5, the characteristics of the problem situations for which PSMs have been developed make this kind of inquiry infeasible. Nevertheless, it is generally recognised that there is a facilitator effect in most PSM-based interventions because such interventions are not disengaged processes<sup>59</sup> (Ackermann, 1996; Phillips & Phillips, 1993; Taket, 2002).

The preceding discussion has focused on interpretations by the researcher of the B-HIVE study experience and associated findings. Overall the experience was a positive one. Based on the evidence generated in the study, it is possible to argue that the use of SCA/COLA with the Whitbread partnership was more than satisfactory for the participants. It is however necessary to discuss the implications of the research findings for the wider use of PSMs in general, and SCA/COLA in particular, with multi-organisational collaboration teams.

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<sup>58</sup> SCA/COLA was also applied outside the Whitbread partnership as part of the B-HIVE research. These applications were carried out with multi-organisational teams which were not operating under a partnership agreement. An analysis of the results of these experiences is beyond the scope of this research but further information can be found in the B-HIVE Project Final report to the Engineering and Physical Sciences Research Council, Research Grant Number: GR/L02647.

<sup>59</sup> It may be recalled that the facilitation of the first two workshops (i.e. Hollins Hall and Meon Valley) was carried out by the Whitbread member of the B-HIVE research team (see Section 7.1.2). Although this person was no longer directly employed by Whitbread by the time the workshops were held, he was still providing services to Whitbread as an independent consultant, and was well-known within the partnership and also by most of the workshop participants. Thus the facilitator was seen as 'legitimate' (Gray, 1996; Huxham, 1991), both by Whitbread and the workshop participants. In addition, all the interviewees stated that they did not feel that the particular choice of facilitator had biased the workshop results.

### 7.3.3 *Implications for wider use of PSMs*

In action research (AR) (see Section 5.1.1), as for other types of research, there is an intention to generalise from a context-specific project experience to a wider context. In practice, the historical and environmental characteristics which are specific to a group under study make it almost impossible to find and study another group with similar attributes. Nevertheless, it is possible to identify key variables in a particular experience which may suggest the characteristics of other situations where similar results might be expected to hold. This would allow us to identify certain aspects from our Whitbread partnership experience which can be conceptualised in ways that are meaningful to or serve to inform other research projects (Eden & Huxham, 1999).

Generalisation will be discussed from two related yet distinct standpoints. These are: generalisation from the Whitbread construction partnership teams to other multi-organisational partnership teams; and from SCA/COLA to PSMs. They will be treated in turn below.

As already discussed in Chapter 6, the move toward partnerships within the construction industry represents a relatively recent trend. These partnerships are all different but with certain key characteristics in common:

- (1) they are typically led by an individual construction client;
- (2) issues of the facility in use and whole life cost are particularly salient for these clients, and these can only be addressed by having a wider set of priorities than the cost of the facility at project completion; and,
- (3) apart from the client, membership of these partnerships usually involves main contractors and project management consultants, and a range of professional firms and specialist sub-contractors, including: architects, designers, quantity surveyors, and mechanical and electrical contractors.



The partnership teams in our study thus are in many ways characteristic of the many temporary multiple organisations that are set up to manage constructions projects (Cherns & Bryant, 1984; Turner & Muller, 2003).

There is also the question of generalisation from SCA/COLA to other PSMs. The application of SCA/COLA, as has been seen, generated positive effects. As has been seen in Section 7.3.1, the use of SCA/COLA and its effectiveness can be understood in terms of assistance with the dialogue activities that help to generate shared meaning, a more balanced dialogue and accommodations in the power balance of participants. These findings cannot be carried over unproblematically to the application of other PSMs in similar circumstances. However, as we have seen in Chapter 6, in many cases the similarity between SCA/COLA and other PSMs gives reason to be encouraged that they might also perform a useful role under these circumstances. So these findings are certainly a positive indication for the more general application of these methods. Provided that the problems of many multi-organisational collaborative teams share the characteristics of high behavioural complexity and low structural complexity noted in Section 7.3.2, these findings seem to be potentially generalisable to other PSMs.

How might SCA/COLA and other PSMs fare with multi-organisational collaborative teams facing a problematique with other characteristics? Evidently this question cannot be answered definitely on the basis of the research findings alone. However, it is possible at least to speculate in a more informed way.

As already mentioned in Section 7.3.2, we may distinguish different problematiques in terms of their degree of behavioural and structural complexity. If they are both low, then there would be no need for analytical assistance. If behavioural complexity is low and structural complexity is high then there is potential for the application of traditional 'hard' OR methods (see Chapter 4). It can be argued though that PSMs might be appropriate to problematiques of high behavioural complexity and high structural complexity, as well as those of high behavioural complexity and low structural complexity. Evidently, the particular

advantages to be gained would be context-dependent. This argument is summarised in Table 7.8 below.

**Table 7-8: Problematique types in multi-organisational collaboration**

Behavioural complexity	High	Potential for PSMs. (the context of this research)	Potential for PSMs.
	Low	No need for analytical assistance.	Potential for 'hard' OR methods.
		Low	High
		Structural complexity	

This chapter has discussed the research carried out with the Whitbread construction partnership. In the chapter that follows, a summary of the research, as well as some ideas, based on the experience of this study, are proposed for future work.

## 8 Conclusions and agenda for further research

Is there a role for PSMs in helping actors of an inter-organisational domain achieve the intended advantages of collaboration? This was the broad research question that this thesis has attempted to address. This concluding chapter is structured as follows. First, a summary of the research process followed will be presented. Next, the most important findings will be highlighted. Finally, an agenda for further research is proposed.

### 8.1 Summary of research process

The topic of this thesis emerged from the researcher's interest in assessing whether or not there was a possible role for problem structuring methods (PSMs) with multi-organisational teams operating in a collaboration context. Our interpretation of this question was to investigate the extent to which PSMs could be of use for actors of an inter-organisational domain, in the sense of assisting them in addressing a domain-level problem of common interest, and in reaching joint agreements with respect to it.

To avoid ambiguity in addressing these issues several key concepts commonly found in the literatures on multi-organisational collaboration and on PSMs required clarification. These were *shared meaning*, *power* and *dialogue*. Using this clarification as a starting point, a conceptual model, which relates the redefined concepts to the processes by which the intended products of collaboration are achieved, was developed.

Within this conceptual model, those elements for which the analytical assistance possible with PSMs appeared to be most relevant were identified. Dialogue was found to be the principal process element where this analytical assistance would be expected to play a significant role. A survey of the characteristics of PSMs, together with an analysis which identified the potential role that PSMs may play in collaboration were conducted. This analysis suggested that PSMs had the

potential to improve the quality of the dialogue between actors who engage in collaboration to address a problematique of common interest; to impact positively on the ownership of the commitments achieved during dialogue; and to facilitate mutual accommodations in the power balance among actors during and after dialogue.

Having identified the reasons why a positivist approach to research design was infeasible, an action research approach was adopted for exploring whether the potential role that had been identified in principle was realisable in practice.

A case study drawn from an action research project in the UK construction industry was undertaken as a vehicle both for exploring the adequacy of the conceptual model developed, and for the investigation of the hypothesis that PSMs can assist in improving the collaboration process. The principal aim of the action research project was to contribute to building a high value construction environment for the industry, which is typically characterised by low levels of learning and strong adversarial relations. These characteristics led to the development of a cross-organisational learning approach (COLA) to construction project reviews, of which a workshop methodology based on the Strategic Choice Approach (SCA) was the core component.

The focus of the action research project on the construction industry, together with Whitbread's participation in this project, led to selection for our study of three multi-organisational construction teams drawn from Whitbread's construction partnership. The projects in which these teams had participated were two hotel redevelopment projects, and a design and build project for a new hotel.

The core data generated from the application of SCA/COLA with these three teams comprised responses by the team members to a post-workshop questionnaire based on the competing values approach (CVA) to group decision process effectiveness, and transcripts of semi-structured, taped-recorded, post-workshop interviews with the team members. Analysis of the questionnaire

responses provided useful background information which subsequently informed the focus of the post-workshop interviews. A grounded-theory approach to the analysis of the interview data was adopted leading to the development of a theoretical framework of the Whitbread partnership process, which was used as a means to organise the research findings. Grounded-theory methods were used to identify and develop the categories of this framework. These methods included open, axial and selective coding, as well as the development of a 'storyline' based on thorough analyses of research memos. The emergent theoretical framework contained four analytical categories or 'themes' representing four stages in a partnership cycle: *starting conditions*, *interacting*, *negotiating* and *adjusting*.

SCA/COLA was used by the three teams during the negotiating stage, as a vehicle to share their learning experiences about their projects and the partnership relationship, and to develop commitments to put these lessons into practice. The main research findings resulting from the application of SCA/COLA with these teams are presented in the following section.

## **8.2 Main research findings**

The purpose of this research was to investigate the potential role of PSMs for multi-organisational collaboration. With the advantages of the clearer focus obtained from the conceptual clarification and model development work carried out in the early stages of the research process, it was possible to interrogate the data generated by the B-HIVE study using grounded-theory methods summarised above. The findings are as follows:

- SCA/COLA allowed participants to engage in open and rich communicative exchanges during their discussions, and facilitated an increased mutual understanding of each other and of their problematique.

- SCA/COLA contributed to the high level of support and ownership demonstrated by the participants to the agreements reached during their discussions, and by the subsequent implementation of such agreements.
- The above effects are indicative of improvements in three of the four aspects of quality of dialogue (i.e. comprehensibility, truthfulness, and trustworthiness) resulting from the application of SCA/COLA.
- Accommodation in the power balance of actors which resulted from the use of SCA/COLA was evidenced in the negotiation and agreement of problem structures by participants and in the adoption of SCA/COLA as part of standard inter-organisational procedures within the partnership during the B-HIVE study. Indeed, SCA/COLA became embedded within Whitbread as a tool available to the partnership which they could and did apply in project reviews other than the ones reported in this thesis.
- There is evidence that SCA/COLA played a role in facilitating positive adjustments in the Whitbread partnership through the integration and dissemination of learning among the partners.

We have listed above the effects of the study experience of applying SCA/COLA on the dialogue element of the conceptual model of collaboration. Effects of SCA/COLA on the quality of dialogue and the ownership of commitments are reasonably clear and positive. Equally, effects of SCA/COLA in facilitating mutual accommodations in the power balance of actors are reasonably clear and positive.

The findings from the experience of SCA/COLA with the Whitbread partnership teams are consistent with an in-principle usefulness of PSMs with actors of an inter-organisational domain engaged in developing a collaborative inter-organisational relationship (Doz & Hamel, 1998; Gray, 1989; Ring & Van de Ven, 1994). Our research has supported the proposition that there is indeed scope

for the use of PSMs with members of multi-organisational collaboration teams, and that these methods do appear to have a positive role in improving the quality of their dialogue, and in facilitating mutual accommodations in their power balance. Finally, our research findings have supported previous conceptions of inter-organisational learning as a key element in ensuring the continuity of inter-organisational collaborations (Doz, 1996; Holmqvist, 2003; Kumar & Nti, 1998). Within this context, the findings suggest PSMs were a significant vehicle to achieve this learning.

### **8.3 Directions for further research**

In this section some potentially valuable possibilities for further study which have surfaced during this research are presented.

- (1) Although the Whitbread partnership is in many ways unique, it is in its essentials a perfectly representative construction partnership. In addition, the teams in the B-HIVE study could be seen as representing one of the many types of multi-organisational collaboration teams that are set up, whether in construction or not, to make decisions relevant to their common concerns, and which can have a variety of purposes including coordination, cooperation, problem-solving, policy formulation and information exchange (Gray, 1989; Huxham, 1996; Schopler, 1987). Therefore, given the positive effects reported from the application of SCA/COLA with this construction partnership, the possibility that SCA/COLA could have similar effects with other types of partnerships and/or collaborations outside construction clearly deserves further investigation.
- (2) In addition, the research reported here have shown the embedding PSM-based methodology within a multi-organisational partnership. This experience suggests a valuable opportunity for further research on the

potential for embedding PSMs as or within standard organisational procedures.

- (3) The evidence from our study also suggests that PSMs may have allowed the partners to achieve their agreements faster and with less invested time. This can be illustrated by the estimated savings of about £100,000 obtained in the settlement process for the Hollins Hall project, which were attributed by the Whitbread property development manager as the direct result of the SCA/COLA intervention. The potential impact of PSMs on partnership productivity is clearly an area for further investigation.
- (4) The study reported in Chapter 7 covered the use of a single PSM, specifically of SCA/COLA. SCA/COLA shares with other PSMs the purpose of enabling group interaction, encouraging participatory problem structuring and analysis, and generating shared understanding. Further work would be of value to investigate whether the findings established in this research extend to other PSMs used either in isolation or in combination with other methods. The evidence suggests the possibility that the distinctly positive impact on the quality of dialogue which occurred in this study would also be observed in applications involving other PSMs and other collaborative contexts. To confirm this speculation would require further research. Also, given that PSMs have in general been criticised for their apparent inability to handle asymmetrical power relations, it is worth investigating whether the mutual accommodations in the power balance of actors achieved in this research can also be obtained with other PSMs.
- (5) The conceptual model of the collaboration process offers a significant opportunity for further research. Additional conceptual research could be conducted to elaborate the model, together with empirical work designed to validate particular aspects of it. Various possible elaborations of the conceptual model are conceivable. For example, the classification of



collaboration domain-level problems or problematiques developed in Chapter 7 can be further elaborated or improved. Improvements in this classification may enable to identify what type of analytical assistance might be of particular value to a specific type of multi-organisational collaboration.

- (6) The current research would have greatly benefited from an established framework for the evaluation of PSMs<sup>60</sup>. Such a consolidated and empirically tested evaluation method would also be of value to the research opportunity identified in (3) above<sup>61</sup>. The development of such as a framework therefore constitutes a very considerable research opportunity.
- (7) The potential of PSMs to contribute to the achievement of inter-organisational learning has been identified in this research. This raises a claim about PSMs which has not been considered previously in the relevant literature. It is at least arguable that other PSMs might equally be expected to play this additional role with actors operating in an inter-organisational domain. However, such a hypothesis would need further work with other methods from the PSM family in order to be substantiated. This under-researched area within the PSM field represents a valuable opportunity to incorporate theories of intra- and inter-organisational learning within the PSM research agenda.
- (8) The facilitator in the first two workshops, who had never used SCA before, felt the need to adapt SCA, largely avoiding its technical jargon and several of its techniques and tools. The problematic transferability of PSM craft skills could be a limitation on the spread of PSMs, or could change their characteristics as a result of those who come to use them.

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<sup>60</sup> See the recent debate on the evaluation of 'wide-band' group decision support systems, such as PSMs (Eden, 1995, 2000; Eden & Ackerman, 1996; Finlay, 1998).

<sup>61</sup> Some progress has been made in the Systems Dynamics (SD) field – see, for example, (Akkermans & Vennix, 1997).

This suggests the issue of transferability of PSMs craft skills as an important topic for empirically-based research. A related research activity would be to find ways of exploring those craft PSM skills that are needed.

(9) In Chapter 2, quality of dialogue was defined in terms of the levels of comprehensiveness, truthfulness, trustworthiness and rightness of the communicative exchanges between actors during dialogue. A research design based on conversational analysis (Atkinson & Heritage, 1984; Psathas, 1995; Ten Have, 1999) would in principle be capable of conducting micro analyses of participants' communicative exchanges during a PSM-based dialogue. It should be noted that the feasibility of implementing such research will heavily depend on research access.

(10) In Chapter 2, six generic types of dialogue were distinguished. This research has concentrated on non-computer supported PSMs, with an emphasis on the negotiation and persuasion categories of dialogue. It would be possible to investigate whether computer-supported PSMs have the potential to effectively support other types of dialogue (e.g. information exchange).

## Appendix A: B-HIVE project participants

## Industry Representatives

## Clients

## Thames Water Utilities

David Glendinning

Stuart Shurlock

## Whitbread Hotel Company

**Mike Thomas**

## Constructors

**Taylor Woodrow Construction**

**Peter Dixon**

Andrew Lees

**Stuart Walker** **Project Manager**

## Consultants

**Davis Langdon Consulting**

Dr John Connaughton

## Ove Arup Partnership

John Gregory from January 1999

Ray Noble until December 1998

## University Representatives

## Leeds Metropolitan University

Graham Orange Lead Investigator

Alan Burke

**London School of Economics**

**Dr Chrisanthi Avgerou** **Lead Investigator**

Dr Tony Cornford

Prof. Frank Land

Prof. Jonathan Rosenhead

### **Project Staff**

#### **Leeds Metropolitan University**

John Boam from September 1998

Sarah McAndrew until May 1998

#### **London School of Economics**

Mike Cushman from March 1998

Dr Barbara Farbey until February 1998

Alberto Franco until January 1999

### **Project Advisors**

Tim Broyd Project mentor

Charles Lancaster Link/IDAC project co-ordinator from April 1999

Peter Pullar-Strecker Link/IDAC project co-ordinator until March 1999

## Appendix B: Details of workshops

### HOLLINS HALL POST COMPLETION REVIEW WORKSHOP

Held at Hollins Hall Marriott on 15<sup>th</sup> September 1998

Attendance:

#### **Construction project team**

Andy	Davies	J Laing
Brian	Dutton	D J Curtis
Stephen	Fenwick	Marriott – Hollins Hall
Richard	Harris	WHC
Phil	Parker	J Laing
Steve	Roberts	Marriott – Hollins Hall
Andy	Trollope	BuroFour
Steve	Walmsley	Holden & Lee

#### **B-Hive team**

Jon	Boam	Leeds Metropolitan University
Alan	Burke	Leeds Metropolitan University
Mike	Cushman	London School of Economics
Alberto	Franco	London School of Economics
Stuart	Shurlock	Thames Water
Mike	Thomas*	Mike Thomas Ltd
Stuart	Walker	Taylor Woodrow

*\*Facilitator*

### MEON VALLEY POST COMPLETION REVIEW WORKSHOP

Held at Harbour Lights Beefeater, Portsmouth on 1 October 1998

Attendance:

#### **Construction project team**

Stuart	Coney	Marriott - Meon Valley
Max	Griffith	WHC
David	Harris	Pearce Leisure
Malcolm	Hudson	AYH

Dexter	Moren	Moren Greenhaugh
Chris	Stutton	Pearce Leisure
Peter	Vince	AYH
David	Walker	Design MD

#### **B-Hive team**

Jon	Boam	Leeds Metropolitan University
Mike	Cushman	London School of Economics
Alberto	Franco	London School of Economics
Mike	Thomas*	Mike Thomas Ltd
Stuart	Walker	Taylor Woodrow

*\*Facilitator*

### **LONDON HEATHROW POST COMPLETION REVIEW WORKSHOP**

Held at London Heathrow Marriott on 10<sup>th</sup> March 1999

Attendance:

#### **Contruction project team**

Tony	Atkinson	J Laing
Hugh	Davis	Buro Four
Raffaella	Formicella	EPR Design
Matthew	Hignell	Oscar Faber
Colin	Morris	EPR Architects
Greg	Place	Heathrow Marriott
Martin	Potter	EPR Architects
Jonathan	Titterton	Heathrow Marriott
Peter	Vince	AYH

#### **B-Hive team**

Mike	Thomas*	Mike Thomas Ltd
Mike	Cushman*	London School of Economics
Jon	Boam	Leeds Metropolitan University
Stuart	Walker	Taylor Woodrow
Graham	Orange	Leeds Metropolitan University
Jonathan	Rosenhead	London School of Economics
Peter	Pullar-Strecker	DETR / EPSRC

*\* Facilitators*

## Appendix C: Modified version of SCA

This document provides a facilitator's briefing for a COLA workshop, showing what goes on, and how the work is organised. In this illustration the workshop is a one day event, but COLA workshops can range from a morning up to two days for a review of a major project or programme. If a workshop is held on-site it is sensible to allow some time for a walk round to familiarise, or re-familiarise, everybody with the project and the issues that arose.

The activities of a COLA workshop can be split into 4 main stages:

- 1) FOCUS: agree decision areas and focus for the day.
- 2) OPTIONS: generate options for action and criteria for choice.
- 3) PLANS: develop coordinated plans and choose among them.
- 4) COMMITMENT: secure commitment to actions and plans.

The model process is designed to lead the participants towards a limited set of commitments to significant value adding actions in the form of improvement plans. Experience gained during the development of COLA clearly indicated that identifying a limited number of achievable actions is more likely to achieve worthwhile change. The more commonly used brain-storming approach tends to merely note everything that could possibly be done rather than leading to effective action.

The illustrations below are photographs of actual flipcharts produced during a number of reviews facilitated by B-HIVE project members. Recording of the events of the workshop can either be through flipcharts or through entry into a supporting software package (called STRAD) and displayed on screen. Whilst it is desirable to use both methods, this does of course requires the services of an assistant to do so. However, it does avoid the need for transferring the content of the flipcharts to the computer after the workshop and speeds the reporting process.

## Stage 1: FOCUS

The purpose of this session is to agree on the main decision areas and the focus for the rest of the day.

### Stage 1.1: introduce the workshop

20 minutes

- Explain the workshop purpose and agenda and elicit the participants' individual aspirations for the day.
- Present **overall view of project** (pre-prepared flipchart and handout) (Figure 1.1).
- Present **project successes, victories and innovations**. (pre-prepared flipchart and handout) Seek amendments and additions, check that the list is agreed by all – explore disagreements to build towards consensus (Figure 1.2 and Figure 1.3).

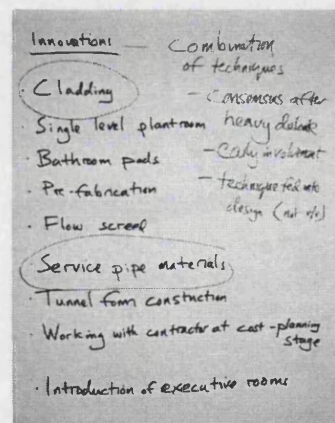
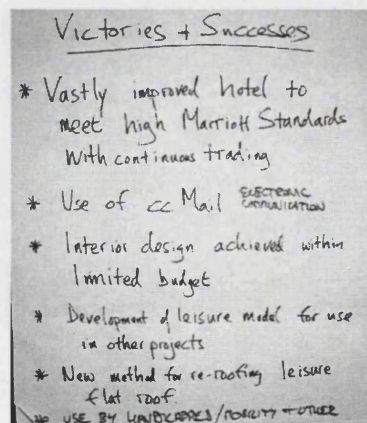
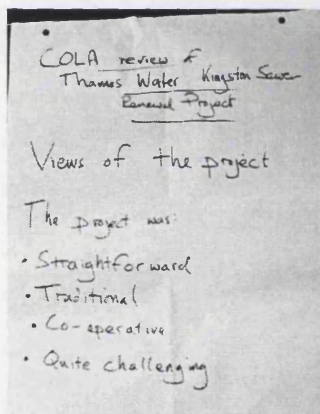


Figure 1.1: views of the project

Figure 1.2: victories and successes

Figure 1.3: innovations

### Stage 1.2: present potential decision areas (opportunities for improvement)

40 minutes

- Present the proposed decision areas that will be the focus of the day. These will be grouped sets of key issues arising from the questionnaires (Figure 1.4). Explain to participants what these are areas where there are, potential **opportunities for improvement**. Stress the need to generate **feasible actions** within those decision



areas that could lead to improvement for future work and promote effective learning across project teams.

- Explain that they have been identified and selected as potential decision areas based on their responses to the questionnaire and that they are listed in no particular order of importance.
- Invite participants to confirm, expand or delete the decision areas presented. It is important that the decision areas are well-formulated. If necessary participants should spend a few minutes writing further decision areas they want to add for discussion on post-its.
- Refine and elaborate final list clearly understood decision areas, which may include clarifying definition labels.

**Hint:** *when prompted to propose new decision areas, participants tend to think in terms of actions and not decision areas. For example, they might propose: “all limitations and site information should be available with initial brief” (action) rather than “how can we improve availability of information at initial brief stage?” (decision area). Put action post-its on a separate flip chart for possible later use as appropriate.*

**Hint:** *participants might mention uncertainties (things that are beyond their control) during their interventions. For example: “ground conditions” or “changes due to planners”. Identify and record these concepts, they may be used later on to generate “exploratory” actions.*

**Hint:** *participants may also mention criteria by which they would measure the value of a particular improvement options within a decision area e.g. time, cost, flexibility, etc. Identify and record them on a separate flip chart. They may be used later to assess the relative worth of the proposed improvement action (Figure 1.5).*

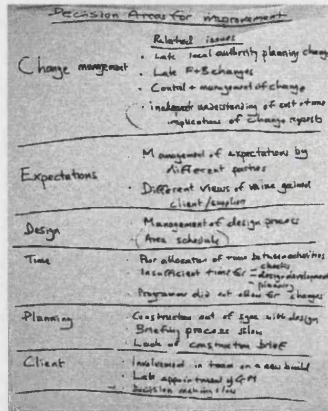


Figure 1.4: decision areas

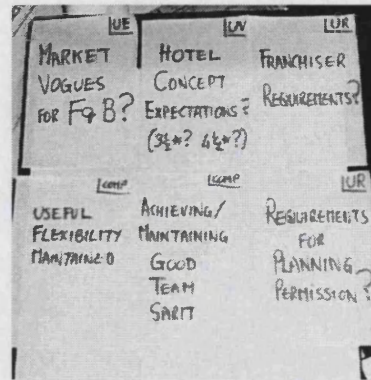


Figure 1.5: uncertainties and potential criteria

### Stage 1.3: link decision areas

10 minutes

- Discuss with participants where the **links** (interconnections) between decision areas should be, using the rule: *if two decision areas are interconnected, it means that a different outcome may result if the two decisions are considered together rather than separately* (Figure 1.6). **Interconnectivity** of decision areas helps define the focus for the workshop.

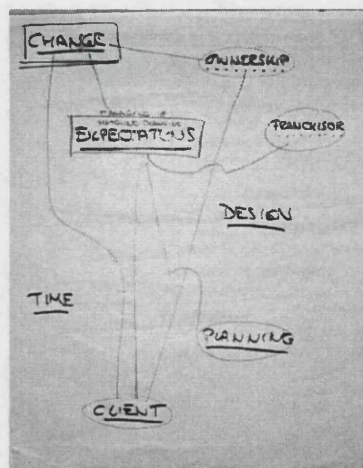


Figure 1.6: linked decision areas

#### **Stage 1.4: rank decision areas**

**15 minutes**

- Participants **rank** the individual decision areas in terms of **importance** and **urgency**. If relevant, try to split them into decision areas concerning the current project and decision areas concerning future projects.
- Discuss the results of the ranking and give participants the chance to reconsider the rankings if necessary.

*Hint: get each participant to vote on the importance and urgency of each decision area (using the flip chart showing the links) by putting sticky coloured dots next to the decision area labels; each participant may be allowed, say, five dots to use - all on one area or spread around several as they wish.*

#### **Stage 1.5: select focus for the workshop**

**5 minutes**

- Assist the participants to select three or (at most) four decision areas as an appropriate focus for the workshop bearing in mind importance, urgency and inter-connectedness. These areas will be the basis of the rest of the workshop activities.

## Stage 2: OPTIONS

The purpose of this session is to generate options for improvement within the decision areas chosen as the focus in Stage 1. Where options are self-evidently beneficial the blockages to action must be identified and initiatives to remove these blockages identified.

### Stage 2.1: generate options

**45 minutes**

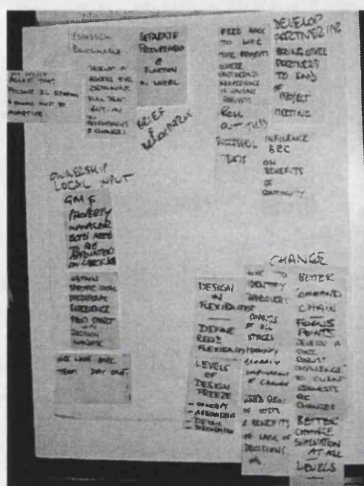
- Invite participants to generate options for improvement in each decision area, subject to the following:
  - Assume that only one option will be taken in each area.
  - Any participant can propose only one option for each area.
  - Any proposed action must be feasible (actionable) by the departments/units within the responsibility of those participating in the workshop or actionable by someone else who one or more participants can directly influence. (Avoid actions without an owner e.g. “improve communication channels”.)
- Participants should spend some minutes in generating options. They should write down their proposals on post-its and place them on a flip chart under the appropriate decision area (Figure 2.1).
- Often the first suggestions are aspirations (or criteria for judging the effectiveness of options). For example:
  - Improve design co-ordination
  - More effective meetings

(Discussion is required to identify if options identified by other participants would meet this aspiration and to generate other suggestions.)

- Group options to identify overlaps, similarities and potentially conflicting actions (Figure 2.2).

- Record options that were discussed but excluded from consideration, with reasons for their exclusions.

**Hint:** use large post-its (102x105mm) and large felt tips to ensure ideas will be concisely expressed and readable by the whole group.



**Figure 2.1:** actions within decision areas



**Figure 2.2:** grouped options for improvement

## Stage 2.2: identify blockages to actions

45 minutes

- If proposed actions are self-evidently beneficial, ask the question why they have not already been implemented. Identify options that remove/reduce the barriers to beneficial change.
- Repeat this process until participants are satisfied that the improvements are achievable and the barriers to the change can be effectively addressed by at least one of the workshop participants.

**Hint:** list chains of options with original proposal at top and actions to confront barriers under each option.

### **Stage 3: PLANS**

The purpose of this session is to identify the value criteria needed for the comparison of options for improvement and to evaluate the options against these criteria.

(If the decision areas can be considered separately without significantly misjudging the effects of the chosen actions (because there likely to be fairly low cross impacts) each area should be considered in turn and the costs and value gained of each action estimated. A procedure for dealing with areas that are highly interconnected is given at the end of this section).

#### **Stage 3.1: identify criteria**

**20 minutes**

- Generate a short list of objectives/criteria against which the added value of the proposed improvements may be evaluated.
- Some criteria will be quantitative: expected savings in time or anticipated reduction in waste. Often criteria that can be generated within a workshop will be more qualitative: better feedback mechanisms or increased clarity in the brief.

#### **Stage 3.2: link criteria to options**

**20 minutes**

- Identify which criteria are appropriate to each group of options for improvement (Figure 3.1).



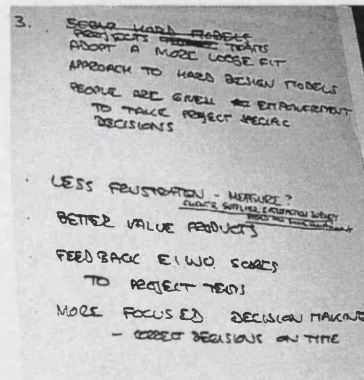


Figure 3.1: actions and criteria

### Stage 3.3: evaluate options

50 minutes

- Taking each decision area in turn, the options for improvement should be assessed against each of the criteria.
- From the options and value criteria develop a single improvement plan for each decision area.

**Hint:** throughout this session uncertainties will continue to arise and should be noted for consideration in the next stage.

## **Stage 4: COMMITMENT**

The purpose of this session is to secure commitment to actions and exploratory actions.

### **Stage 4.1: develop exploratory actions**

**45 minutes**

- Consider the uncertainties and risks that may threaten the success of implementing the improvement plans. List the uncertainties and agree how they should be addressed for each of the proposed improvements.
- Invite participants to identify exploratory actions that will reduce the uncertainties. Examples are:
  - carry out soil study in order to complete structural design
  - approach planners to get an idea of when we can expect approval
  - discuss with senior managers of client company their preferences between alternative design solutions
- Choose the best exploratory actions in terms of confidence gained, cost in resources and delay caused.

*Hint: This will allow the refining of the risk profile for the current/future projects.*

### **Stage 4.2: agree commitment package**

**30 minutes**

- Record on a flip chart and/or in the supporting computer programme:
  - actions and exploratory actions to be taken
  - who is to take each action
  - when is each action is to be completed
  - the criteria for establishing that the action has been implemented
  - the criteria by which the actions will be evaluated (the anticipated gain) (Figure 4.1).



- [illegible]

## 15 minutes

- ### Note: Procedure for dealing with interconnected areas

The purpose of this activity is to develop two or three alternative plans in the form of a portfolio of options for improvement that could be taken, one within each decision area, at the same time (see below), and to choose the plan with the greatest potential for benefit.

<b>Plans</b>	<b>Decision Area 1</b>	<b>Decision Area 2</b>	<b>Decision Area 3</b>
Plan A	Option A1	Option A2	Option A3
Plan B	Option B1	Option B2	Option B3
Plan C	Option C1	Option C2	Option C3

(Of course, Option A1 could well be the same as Option B1 ... etc.)

Identify plans:

- Explain to participants what the plans are, i.e. a bundle of actions to be taken together. Identify a number (at least two) of promising plans for the decision areas that you have been working on.

Choose the best plan using agreed criteria:

- Carry put a comparative analysis of pair of plans (see below). If possible, give the plans meaningful labels. Compare plans on each of the criteria selected in Stage 3.1.

<b>Criteria (examples)</b>	<b>Plan A (Actions A1-A2-A3)</b>	<b>Plan B (Actions B1-B2-B3)</b>
Cost		
Customer satisfaction		
Time saving		
Delay in gaining planning approval		

- If there is a clear winner on all criteria, eliminate the less preferred plan. Repeat for second pair of plans and so on

- If no clear winner emerges (on some or all of the criteria) record why – the reasons are probably things that are uncontrollable in nature or uncertain at the time of the workshop. These uncertainties are explored in Stage 4.1 of the review workshop.

## Appendix D: Pre-workshop questionnaire

### COLA Stage Review - Project Completion Reviews

#### Pre-Workshop Questionnaire

##### Introduction

The Cross-Organization Learning Approach (COLA) has been devised and developed through Action Research undertaken by the B-HIVE Project Team. COLA aims to provide organizations with simple modular tools for developing sustainable Continuous Improvement systems that are based on feedback learning from project experiences. The focus is on risk related value sharing and the ability of all stakeholders to profitably deliver demonstrable value to the client.

There are two basic components to COLA: *review*, for extracting the value related learning from shared experiences; and *information systems*, for retaining and communicating the lessons being learned

The process of review focuses on the issues relating to the critical events that affect the success of a project. It provides a structure for gathering information about the value of these issues and helps the participants move from a shared understanding to specific actions. Two basic review types are recognised:

- *Stage Reviews*, which look back over completed work to extract the lessons to be learned from successful achievements and opportunities for improvement. The premise being that if we were starting again, knowing what we know now, how would we do it differently
- *Triggered Reviews*, which are concerned with unplanned and problematic issues that must be resolved as work progresses. The lessons learned at this time generally relate to patch fixing rather than radical change

## **This Questionnaire**

The following questionnaire relates to Stage Reviews and is to be completed by the project team members attending the Review Workshop. Whilst the questionnaire may appear long, it has been designed for ease of use and normally takes about an hour to complete. It will be used by the Review Facilitation Team to prepare the workshop agenda and helps the facilitator to make the best use of the limited time available within the workshop environment.

The workshop will be used as forum for understanding the views and improvement aspirations of all the participants working together as an effective team. You need to be frank and support your views with related facts and figures. The workshop will focus specifically on those areas where significant value adding benefits are most likely to be realised.

Please tick the boxes that best reflect your view of the project and use the comment space to help describe your view of the project.

## A. Planning

### 1. The quality of the Project Brief for your purposes was:

	a) Over-specified	b) Appropriate	c) Critical discrepancies	d) Inadequate

### 2. What activities did you have direct responsibility for, and was there sufficient time allocated:

		Time allowed			
Activity	Responsibility	a) Plenty	b) Sufficient	c) Tight	d) Inadequate
<i>Design</i>					
<i>Costplanning</i>					
<i>Procurement</i>					
<i>Off-site manufacture</i>					
<i>Site Construction</i>					
<i>Commissioning</i>					
<i>Other (please specify)</i>					

### 3. Given the time available for the project planning, how well was the time allocated between above activities?

	a) Optimal	b) Well balanced	c) Fair	d) Poorly prioritised

Comments on Planning:

## B. Team Performance

**4. How do you judge the performance of the other parties? Underline your own organisation and tick the other boxes as appropriate**

Organisation	a) Excellent	b) Good	c) Fair	d) Poor
<i>Client</i>				
<i>Client Property Manager</i>				
<i>Project Management</i>				
<i>Architect</i>				
<i>Interior Designers</i>				
<i>Structural Engineers</i>				
<i>M&amp;E Engineers</i>				
<i>Quantity Surveyors</i>				
<i>Construction Management</i>				
<i>Services Management</i>				
<i>Local Authorities</i>				
...				
<b>Please list other Contractors / Service providers with whom you were involved, and indicate performance by ticking the boxes as above</b>				

*Comments on team performance*



### C. Handling change

**5. Changes during this project, e.g. changes in brief, operational requirements, project team membership, changes caused by events on-site, etc.**

	a) No changes	b) Some changes	c) Many changes	d) Too many changes

**6. How well were changes handled in this project?**

	a) No problems	b) Minor problems	c) Major problems	d) Badly handled

**Comments on Handling Change:**

### D. Value

7. How did the actual value on this project compare with your expectations			
Measured in terms of:	a) Better	b) As Expected	c) Worse
<i>Value for money to the client</i>			
<i>Return on your investment</i>			
<i>Future opportunities with this Client</i>			
<i>Future opportunities with other Clients</i>			

***Comments on Value to the client, to the team and to your organisation:***

**E. Your experience of working on this project**

*8. Please describe innovations in processes or products developed and used on this project*

*9. Please describe notable achievements on this project.*

***10. Please describe issues surrounding critical events (e.g. significant change, misunderstandings or non-conformance), that had a significant impact on the progress of the project and / or your role in the project.***

**11. Please describe lessons that should be learned from this project for future projects.**

**12. Please mark the point on each scale that best describe your experience on this project with this team**

Co-operative	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	Confrontational
Complex	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	Straightforward
Stressful	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	Relaxed
Challenging	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	Uninspiring
Innovative	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	Traditional

**Comments:**

## F. Your views about this questionnaire

	Too complex	About right	Inadequate
Did you find this questionnaire			
How long did it take you to complete the questionnaire			
Suggestions:			

**Thank you for completing this questionnaire. Please return it to the Review**

**Co-ordinator:**

---

**no later than** \_\_\_\_\_

## **Appendix E: Post-workshop CVA questionnaire**

# **GROUP DECISION PROCESS EFFECTIVENESS**

## **THE COMPETING VALUES APPROACH**

### **CODING GUIDE**

*Decision Techtronics Group*

*Institute for Government and Policy Studies*

*University at Albany, State University of New York*

*December, 1996*



## CONSENSUAL PERSPECTIVE

### Participatory Process

SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
6	5	4	3	2	1

Time constraints made it difficult for all opinions to get an equal hearing.

Group members were encouraged to raise questions and express personal concerns even when divergent.

All affected parties were well represented in the meeting.

We tried to understand the interest and concerns of every member of our group.

Some people felt they had not been given full opportunity to participate.

### Supportability of Decision

SD	GD	D	A	GA	SA
6	5	4	3	2	1
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
6	5	4	3	2	1
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
1	2	3	4	5	6

We did not reach a full consensus.

By the end of the process, our group displayed high morale and a strong "team spirit".

The outcome of the meeting was nothing more than a foregone conclusion that few of us really supported.

There was a great deal of commitment in our group to the way we resolved key issues.

We all agreed on the next steps that ought to be taken.

## POLITICAL PERSPECTIVE

### Adaptable Process

SD	GD	D	A	GA	SA
6	5	4	3	2	1
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
6	5	4	3	2	1
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
1	2	3	4	5	6

There was no opportunity to alter the procedures we used.

We could have changed our evaluation of various courses of action at any time during the process.

The meeting was too structured.

The method we used was very flexible in dealing with the problem.

The approach was adaptable enough to deal with changes in the situation.

### Legitimacy of Decision

SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
6	5	4	3	2	1
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
1	2	3	4	5	6

We were especially careful to respect the interests and concerns of external groups.

Outside interests might be alienated by our actions.

The political feasibility of proposed actions was made quite important in our deliberations.

Because the process seemed so fair, any result would have the appearance of greater legitimacy.

An effort was made to find a solution that would not in any way damage how others perceived our group.

## RATIONAL PERSPECTIVE

### Goal-centered Process

SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
6	5	4	3	2	1
SD	GD	D	A	GA	SA
1	2	3	4	5	6

The method we used to deal with the problem helped to further clarify our real priorities.

We developed a logical and coherent framework for evaluating various courses of action.

The process made us specifically relate our discussions to statements of our group's values.

The focus of our discussion was often misdirected.

The process encouraged us to consider our group's goals and objectives.

### Efficiency of Decision

SD	GD	D	A	GA	SA
6	5	4	3	2	1
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
6	5	4	3	2	1
SD	GD	D	A	GA	SA
6	5	4	3	2	1

Important organizational resources were wasted in the process of making a decision.

Our group worked with considerable efficiency.

Results were achieved in much less time than it ordinarily would have taken.

It is difficult to point to any tangible results.

The costs of the process were too high.

## EMPIRICAL PERSPECTIVE

### Data-based Process

SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
6	5	4	3	2	1
SD	GD	D	A	GA	SA
6	5	4	3	2	1
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
1	2	3	4	5	6

The work of our group was guided by available information when appropriate.

We did not have enough data to reliably evaluate our options.

The process was based too much on subjective judgments rather than factual considerations.

Any data we used were presented in a useful form.

Our access to pertinent information helped to answer important questions.

### Accountability of Decision

SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
1	2	3	4	5	6
SD	GD	D	A	GA	SA
6	5	4	3	2	1
SD	GD	D	A	GA	SA
1	2	3	4	5	6

A record was made to document the resolution of all key issues.

Most steps in the process could be retraced and recounted, if necessary.

As a result of the process, our group was well prepared to be fully accountable for its deliberations.

It would be difficult to explain our actions to anyone who was not present.

The approach recognized the need for our group to be answerable for its actions.

## Appendix F: List of interviewees

Participant	Organisation	Role	Workshop
Richard Harris	Whitbread Hotel Company	Property Development Manager	Hollins Hall
Max Griffith	Whitbread Hotel Company	Property Manager, Special Projects	Meon Valley
Stephen Fenwick	Whitbread Hotel Company	Hotel Property Manager, Hollins Hall	Hollins Hall
Stuart Coney	Whitbread Hotel Company	Hotel Property Manager, Meon Valley	Meon Valley
Andrew Davies	J Laing (partner)	Whitbread Projects Manager	Hollins Hall
Phil Parker	J Laing (partner)	Financial Manager	Hollins Hall
David Harris	Pearce Leisure (partner)	Whitbread Project Manager	Meon Valley
Andy Trollope	Buro Four (partner)	Project Manager,	Hollins Hall
Hugh Davis	Buro Four (partner)	Project Manager	London Heathrow
Peter Vince	AYH (partner)	Quantity Surveyor	Meon Valley
Malcolm Hudson	AYH (partner)	Project Manager	Meon Valley
Steve Walmsley	Holden & Lee	Quantity Surveyor	Hollins Hall
Brian Dutton	DJ Curtis	Architect	Hollins Hall
Dexter Moren	Moren Greenhaugh	Architect	London Heathrow
David Walker	Design MD	Designer	London Heathrow
Mathew Hignell	Oscar Faber	Mechanical & Electrical consultant	London Heathrow
Raffaella Fornicella	EPR Design	Interior Designer	London Heathrow
Colin Morris	EPR Design	Interior Designer	London Heathrow
Martin Potter	EPR Design	Interior Designer	London Heathrow

# Appendix G: Interview protocol

\_\_\_\_\_ Workshop

## 1. Personal Details

- Name
- Company
- Time with company
- Position
- Involvement with WHC projects

## 2. Pre-workshop processes

- Did the questionnaire help you make the points you wanted to make?
- Did you think the agenda of issues drawn up for the workshop was fair/appropriate?

*Would you have liked more input into the agenda setting before the workshop?*

- Was the walk round the hotel and the overnight stay useful/a good use of your time?

## 3. Workshop processes

- Did it help you learn from other organisations?
- Do you think other organisations learned from you?
- Did the process help you

*Gain competence, insight, learning*

*Understand/accept/own final decisions*

- How did it compare with previous project reviews/post-mortems you have been to:

*Better/worse*

*More productive/less*

*More confrontational/less*

*More informative/less*

- Did it feel like a good use of your time?
- Did you understand the process as it happened?
- Did you find it:

*Helpful*

*Too loose/tight*

*Too fuzzy/sharp*

- Was having a facilitator closely identified with WHC a help or a hindrance?
- Were you satisfied with process of the workshop?

*Did the facilitation style help or hinder*

#### **4. Practical arrangements**

- Should the workshop have been sooner after/longer after practical completion?
- Were the right people there?
- Was the venue suitable?
- Should the workshop have been shorter/longer?

#### **5. Outcomes of workshop**

- Was the record of the workshop in the best format for you?
- Is legitimacy of the decisions a significant problem?

*What could be done to increase legitimacy?*

- Have you done anything differently as a result of the workshop?
- Can you identify any changes in the way your organisation, or partner organisations, do things as a result of the workshop?

*If all proposed changes not underway, what do you think is stopping them happening?*

- If further team meetings held, has the nature of these meetings changed?
- Did the workshop meet your initial objectives?
- What do you consider a good workshop outcome?

*Decisions made*

*Consensus reached*

*Thoughts shared*

*How far did this workshop meet these aims?*

## **6. Highlights and improvements**

- Can you identify any highlights of the process?
- Can you suggest any improvements?

## **7. Information systems**

- Was there any information the workshop didn't have which would have helped?

*Could this have been available from your project records?*

*Could this have been available from other partners' project records?*

*Other internal sources*

*External sources*

- What is recorded during the project and how
- What information did you need?

## Bibliography

- Ackermann, F. 1990. The Role of Computers in Group Decision Support. In C. Eden, & J. Radford (Eds.), *Tackling Strategic Problems: the role of group decision support*: 132-141. London: Sage.
- Ackermann, F. 1996. Participant's perceptions on the Role of Facilitators using Group Decision Support Systems. *Group Decision and Negotiation*, 5: 93-112.
- Ackermann, F. 1997. Modeling for Litigation: mixing qualitative and quantitative approaches. *Interfaces*, 27(2): 48-65.
- Ackermann, F., & Eden, C. 1994. Issues in Computer and Non-computer Supported GDSSs. *Decision Support Systems*, 12(4,5): 381-390.
- Ackermann, F., & Eden, C. 2001. Contrasting Single User and Networked Group Decision Support Systems for Strategy Making. *Group Decision and Negotiation*, 10(1): 47-66.
- Ackermann, F., & Eden, C. 2001. SODA and Mapping in Practice. In J. Rosenhead, & J. Mingers (Eds.), *Rational Analysis in a Problematic World Revisited*: 43-60. Chichester: Wiley.
- Ackoff, R. 1974. *Redesigning the Future: a systems approach to societal problems*. New York: Wiley.
- Ackoff, R. 1974. The Social Responsibility of Operational Research. *Operational Research Quarterly*, 25(3): 361-371.
- Ackoff, R. 1975. A Reply to the Comments of Keith Chesterton, Robert Goodman, Jonathan Rosenhead, and Colin Thunhurst. *Operational Research Quarterly*, 26(1): 96-99.
- Ackoff, R. 1979. The Future of Operational Research is Past. *Journal of Operational Research Society*, 30(2): 93-104.
- Ackoff, R. 1979. Resurrecting the Future of Operational Research. *Journal of Operational Research Society*, 30(3): 189-199.
- Ackoff, R. 1981. The Art and Science of Mess Management. *Interfaces*, 11(1): 20-26.
- Ackoff, R. 1987. OR, A Post Mortem. *Operations Research*, 35(3): 471-474.
- Ackoff, R. 1999. *Re-Creating the Corporation: A design of organizations for the 21st century*. New York: Oxford University Press.
- Adams, J. S. 1976. The structure and dynamics of behavior in organizational boundary roles. In M. D. Dunnette (Ed.), *Handbook of Industrial and Organizational Psychology*: 1175-1199. Chicago: Rand McNally.
- Agranoff, R., & McGuire, M. 2001. After the Network is Formed: process, power and performance. In M. P. Mandell (Ed.), *Getting Results Through Collaboration*: 11-19. Westport, CT: Quorum.
- Akkermans, H., & Vennix, J. 1997. Client's opinions on group-model building: an exploratory study. *System Dynamics Review*, 13(1): 3-31.
- Alderfer, C. P. 1979. Consulting to Underbounded Systems. In C. P. Alderfer, & C. Cooper (Eds.), *Advances in Experimental Social Processes, Volume 2*: 267-295. Chichester: Wiley.

- Aldrich, H. 1976. Resource Dependence and Interorganizational Relations. *Administration and Society*, 7(4): 419-454.
- Aldrich, H. 1979. *Organizations and Environments*. Englewood Cliffs, NJ: Prentice Hall.
- Aldrich, H., & Herker, D. 1977. Boundary-spanning Roles and Organization Structure. *Academy of Management Review*, 2 (2): 217-230.
- Altheide, D. L. 1988. Mediating Cutbacks in Human Services: a case study in the negotiated order. *Sociological Quarterly*, 29(3): 339-355.
- Argyris, C. 1999. *On Organizational Learning*. Oxford: Blackwell Publishers.
- Argyris, C., Putnam, R., & MacLain-Smith, D. 1982. *Action Science: concepts, methods and skills for research and intervention*. San Francisco: Jossey-Bass.
- Argyris, C., & Schon, D. A. 1991. Participatory Research and Action Science Compared: a commentary. In W. F. Whyte (Ed.), *Participatory Action Research*: 85-96. London: Sage.
- Atkinson, J. M., & Heritage, J. 1984. *Structures of Social Action: studies in conversation analysis*. Cambridge: Cambridge University Press.
- Axelrod, R. 1976. *Structure of Decision: the cognitive maps of political elites*. Princeton: Princeton University Press.
- Bachrach, P., & Baratz, M. S. 1962. The Two Faces of Power. *American Political Science Review*, 56(4): 947-952.
- Bachrach, P., & Baratz, M. S. 1963. Decisions and nondecisions: an analytical framework. *American Political Science Review*, 57(3): 641-651.
- Bachrach, P., & Baratz, M. S. 1970. *Power and Poverty*. London: Oxford University Press.
- Barley, S. R. 1983. Semiotics and the Study of Occupational and Organizational Cultures. *Administrative Science Quarterly*, 28(3): 393-413.
- Barlow, J., Ohen, M., Jashapara, A., & Simpson, Y. 1997. *Towards Positive Partnering: revealing the realities of the construction industry*. Bristol: The Policy Press.
- Barringer, B. R., & Harrison, J. S. 2000. Walking a Tightrope: creating value through interorganizational relationships. *Journal of Management*, 26(3): 367-403.
- Becker, H. S. 1958. Problems of Inference and Proof in Participant Observation. *American Sociological Review*, 23: 652-660.
- Beckhard, R. 1969. *Organization Development: strategies and models*. New York: Addison Wesley.
- Beer, S. 1985. *Designing the System for Organizations*. Chichester: Wiley.
- Bell, P. 1998. Strategic Operational Research. *Journal of the Operational Research Society*, 49(4): 381-391.
- Benfari, R., Wilkinson, H., & Orth, C. 1986. The Effective Use of Power. *Business Horizons*, 29(3): 12-16.
- Bennett, J., & Jayes, S. 1995. *Trusting the Team: the best practice guide to partnering in construction*. London: Thomas Telford Partnering.
- Bennett, J., & Jayes, S. 1998. *The Seven Pillars of Partnering: a guide to second generation partnering*. London.: Thomas Telford Partnering.
- Bennett, P. 1985. On Linking Approaches to Decision-Aiding: issues and prospects. *Journal of Operational Research Society*, 36(8): 659-669.



- Bennett, P., Cropper, S., & Huxham, C. 1989. Modelling Interactive Decisions: the hypergame focus. In J. Rosenhead (Ed.), *Rational Analysis for a Problematic World: problem structuring methods for complexity, uncertainty and conflict*: 283-314. Chichester: Wiley.
- Bennett, P., & Howard, N. 1996. Rationality, Emotion and Preference Change: Drama-theoretic models of choice. *European Journal of Operational Research*, 92(3): 603-614.
- Bennett, P., & Huxham, C. 1982. Hypergames and what they do: a 'soft OR' approach. *Journal of Operational Research Society*, 33(1): 41-50.
- Benson, J. 1975. The Inter-organizational Network as a Political Economy. *Administrative Science Quarterly*, 20(2): 229-249.
- Berger, P. L., & Luckmann, T. 1966. *The Social Construction of Reality: a treatise in the sociology of knowledge*. New York: Doubleday.
- Blau, P. 1964. *Exchange and Power in Social Life*. New York: Wiley.
- Bliss, J., Monk, M., & Ogborn, J. 1983. *Qualitative Data Analysis for Educational Research: a guide to uses of systemic networks*. London: Croom Helm.
- Blumer, H. 1971. Social Problems as Collective Behaviour. *Social Problems*, 19: 298-306.
- Boggs, C. 1976. *Gramsci's Marxism*. London: Pluto.
- Bolinger, D. 1965. The Atomization of Meaning. *Language*, 11: 555-573.
- Bougon, M. 1992. Congregate Cognitive Maps: A united dynamic theory of organization and strategy. *Journal of Management Studies*, 29(3): 369-389.
- Bougon, M., Weick, K., & Binkhorst, D. 1977. Cognition in Organizations: an analysis of the Utrecht Jazz Orchestra. *Administrative Science Quarterly*, 22(4): 606-639.
- Boulding, K. 1989. *Three faces of power*. Newbury Park: Sage.
- Bourdieu, P. 1996. *The Estate Nobility: elite schools in the field of power*. Stanford: Stanford University Press.
- Bowen, M., & Power, F. 1993. The Moral Manager: communicative ethics and the Exxon Valdez disaster. *Business Ethics Quarterly*, 3(2): 97-116.
- Brown, J. R., & MacLeod, N. D. 1996. Integrating Ecology into Natural Resource Management Policy. *Environmental Management*, 20(3): 289-296.
- Brown, L. 1980. Planned Change in Underorganized Systems. In T. Cummings (Ed.), *Systems Theory for Organization Development*. New York: Wiley.
- Bryant, J. 1989. *Problem Management: a guide for producers and players*. Chichester: Wiley.
- Bryant, J. 2003. *The Six Dilemmas of Collaboration*. Chichester: Wiley.
- Bryman, A. (Ed.). 1988. *Doing Research in Organizations*. London: Routledge.
- Bryson, J., & Crosby, B. C. 1992. *Leadership for the Common Good: tackling public problems in a shared-power world*. San Francisco: Jossey-Bass.
- Burns, T. 1961. Micropolitics: mechanisms of institutional change. *Administrative Science Quarterly*, 6(3): 257-281.

- Burns, T. 1966. On the Plurality of Social Systems. In J. Lawrence (Ed.), *Operational Research and the Social Sciences*, Vol. 165-178. London: Tavistock Press.
- Burns, T., & Stalker, G. 1961. *The Management of Innovation*. London: Tavistock Press.
- Burrell, G., & Morgan, G. 1979. *Sociological Paradigms and Organisational Analysis*. London: Heinemann.
- Campbell, D. T., & Stanley, J. L. 1966. *Experimental and Quasi-experimental Design for Research*. Skokie, IL: Rand McNally.
- Carpenter, S., & Kennedy, W. 1988. *Managing Public Dispute: a practical guide to handling conflict and reaching agreements*. San Francisco: Jossey-Bass.
- Chafee, E. 1985. Three Models of Strategy. *Academy of Management Review*, 10(1): 89-98.
- Chandler, A. 1977. *The Visible Hand: the managerial revolution in American business*. Cambridge, MA.: Belknap Press.
- Channon, D. F. 1973. *The Strategy and Structure of British Enterprise*. London: Macmillan.
- Checkland, P. 1981. *Systems Thinking, Systems Practice*. Chichester: Wiley.
- Checkland, P. 1983. OR and the Systems Movement: mappings and conflicts. *Journal of the Operational Research Society*, 34(8): 661-675.
- Checkland, P. 1985. From Optimising to Learning: a development of systems thinking for the 1990s. *Journal of the Operational Research Society*, 36(9): 757-767.
- Checkland, P. 1991. From Framework through Experience to Learning: the essential nature of action research. In H. Nissen, H. K. Klein, & R. Hirschheim (Eds.), *Information Systems Research: contemporary approaches and emergent traditions*: 397-403. Amsterdam: Elsevier Science Publishers.
- Checkland, P. 1999. *Soft Systems Methodology: a 30-year retrospective*. Chichester: Wiley.
- Checkland, P., & Holwell, S. 1998. Action Research: its nature and validity. *Systemic Practice and Action Research*, 11(1): 9-21.
- Checkland, P., & Holwell, S. 1998. *Information, Systems and Information Systems: making sense of the field*. Chichester: Wiley.
- Checkland, P., & Scholes, J. 1990. *Soft Systems Methodology in Action*. Chichester: Wiley.
- Cherns, A., & Bryant, D. 1984. Studying the Client's role in Construction Management. *Construction Management and Economics*, 2: 177-184.
- Chesterton, K., Goodsman, R., Rosenhead, J., & Thunhurst, C. 1975. A Comment on Ackoff's "The Social Responsibility of Operational Research". *Operational Research Quarterly*, 26(1): 91-95.
- Child, J. 2001. Learning Through Strategic Alliances. In M. Dierkes, A. B. Antal, J. Child, & I. Nonaka (Eds.), *Handbook of Organizational Learning and Knowledge*: 657-680. Oxford: Oxford University Press.
- Child, J., & Faulkner, D. 1998. *Strategies of Co-operation: managing alliances, networks and joint ventures*. Oxford: Oxford University Press.

- Chisholm, R. F., & Elden, M. 1993. Features of Emerging Action Research. *Human Relations*, 46(2): 275-298.
- Churchman, C. W. 1971. *Design of Inquiring Systems: basic concepts of systems and organization*. New York: Basic Books.
- Ciborra, C. 1991. Alliances as Learning Environments: cooperation, competition, and change in hightech industries. In L. K. Mytelka (Ed.), *Strategic Partnerships: state, firms and international competition*: 51-77. London: Pinter.
- Clark, P. 1972. *Action Research and Organizational Change*. London: Harper and Row.
- Clegg, S. 1975. *Power, Rule and Domination*. London: Routledge and Kegan Paul.
- Clegg, S. 1989. *Frameworks of Power*. London: Sage.
- Cohen, A. 1975. *Two Dimensional Man: an essay on the anthropology of power and symbolism in complex society*. London: Routledge and Kegan Paul.
- Connaughton, J. N., & Green, S. D. 1996. *A Client's Guide to Value Management in construction*. London: CIRIA.
- Cook, T. D., & Campbell, D. T. 1979. *Quasi-experimentation: design and analysis issues for field settings*. Boston, MA: Houghton Mifflin Company.
- Crozier, M. 1964. *The Bureaucratic Phenomenon*. Chicago: Chicago University Press.
- Czarniawska, B. 1986. The Management of Meaning in the Polish Crisis. *Journal of Management Studies*, 23(3): 313-331.
- Dahl, R. 1957. The Concept of Power. *Behavioral Science*, 20: 201-215.
- Dahl, R. 1961. *Who Governs? Democracy and Power in an American City*. New Haven: Yale University Press.
- Dando, M. R., & Bennett, P. G. 1981. A Kuhnian Crisis in Management Science? *Journal of Operational Research Society*, 32(2): 91-103.
- Dando, M. R., & Sharp, R. G. 1978. Operational Research in the UK in 1977: the causes and consequences of a myth? *Journal of Operational Research Society*, 29(10): 939-949.
- Das, S., Sen, P., & Sengupta, S. 1998. Impact of Strategic Alliances on Firm Valuation. *Academy of Management Journal*, 41(1): 27-41.
- Day, R., & Day, J. 1977. A Review of the Current State of Negotiated Order theory: an appreciation and a critique. *The Sociological Quarterly*, 18: 126-142.
- de Geus, A. 1988. Planning as Learning. *Harvard Business Review*, 66(2): 70-74.
- Deetz, S. 1973. Words without Things: towards a social phenomenology of language. *Quarterly Journal of Speech*, 59: 40-51.
- Deetz, S. 1992. *Democracy in an Age of Corporate Colonization: developments on communication and the politics of everyday life*. Albany, New York: State University of New York.
- Deetz, S. 1992. Disciplinary Power in the Modern Corporation. In M. Alvisson, & H. Willmott (Eds.), *Critical Management Studies*: 21-45. London: Sage.

- Deetz, S., & Mumby, D. 1985. Metaphors, Information, and Power. In B. Ruben (Ed.), *Information and Behaviour Vol 1*: 369-386. New Brunswick, NJ: Transaction Books.
- Degeling, P. 1995. Calls for Urban Public Health Intersectoralism: an Australian perspective. *Policy and Politics*, 23(4): 289-301.
- DeSanctis, G., & Gallupe, R. B. 1987. A Foundation for the Study of Group Decision Support Systems. *Management Science*, 33(5): 589-609.
- Dickson, P., & Weaver, K. 1997. Environmental Determinants and Individual-level Moderators of Alliance Use. *Academy of Management Journal*, 40(2): 404-425.
- Donnellon, A., Gray, B., & Bougon, M. G. 1986. Communication, Meaning, and Organized Action. *Administrative Science Quarterly*, 31(1): 43-55.
- Dowding, K. 1996. *Power*. Minneapolis: University of Minnesota Press.
- Doz, Y. 1996. The Evolution of Cooperation in Strategic Alliances: initial conditions or learning processes? *Strategic Management Journal*, 17: 55-83.
- Doz, Y., & Hamel, G. 1998. *Alliance Advantage*. Boston: Harvard Business School Press.
- Dutton, J., & Duncan, R. 1987. The Creation of Momentum for Change Through the Process of Strategic Issue Diagnosis. *Strategic Management Journal*, 8(3): 279-295.
- Dyson, R. 2000. Strategy, Performance and Operational Research. *Journal of the Operational Research Society*, 51(1): 5-11.
- Easterby-Smith, M., Thorpe, R., & Lowe, A. 1991. *Management Research: an introduction*. London: Sage.
- Edelman, M. 1964. *The Symbolic Uses of Politics*. Urbana, IL: University of Illinois.
- Eden, C. 1978. Operational Research and Organization Development. *Human Relations*, 31(8): 657-674.
- Eden, C. 1982. Problem Construction and the Influence of O.R. *Interfaces*, 12(2): 50-60.
- Eden, C. 1986. Problem Solving or Problem Finishing. In M. Jackson, & P. Keys (Eds.), *New Directions in Management Science*: 97-107. Aldershot: Gower.
- Eden, C. 1988. Cognitive Mapping: a review. *European Journal of Operational Research*, 36(1): 1-13.
- Eden, C. 1990. Managing the Environment as a Means to Managing Complexity. In C. Eden, & J. Radford (Eds.), *Tackling Strategic Problems: the role of group decision support*: 154-161. London: Sage.
- Eden, C. 1992. A Framework for Thinking About Group Decision Support Systems. *Group Decision and Negotiation*, 1: 199-218.
- Eden, C. 1995. On Evaluating the Performance of "Wide-band" GDSS's. *European Journal of Operational Research*, 81(2): 302-311.
- Eden, C. 1996. The Stakeholder/Collaborator Strategy Workshop. In C. Huxham (Ed.), *Collaborative Advantage*: 44-56. London: Sage.
- Eden, C. 2000. On Evaluating the Performance of GSS: furthering the debate by Paul Finlay - a response from Colin Eden. *European Journal of Operational Research*, 120(1): 218-222.

- Eden, C., & Ackerman, F. 1996. 'Horses for Courses': a stakeholder approach to the evaluation of GDSSs. *Group Decision and Negotiation*, 5(1): 501-519.
- Eden, C., & Ackerman, F. 2000. Mapping Distinctive Competencies: a systemic approach. *Journal of the Operational Research Society*, 51(1): 12-20.
- Eden, C., & Ackerman, F. 2001. SODA: the principles. In J. Rosenhead, & J. Mingers (Eds.), *Rational Analysis for a Problematic World Revisited: problem structuring methods for complexity, uncertainty and conflict*: 21-41. Chichester: Wiley.
- Eden, C., & Ackermann, F. 1998. *Strategy Making: the journey of strategic planning*. London: Sage.
- Eden, C., & Ackermann, F. 2004. Use of 'Soft OR' Models by Clients: what do they want from them? In M. Pidd (Ed.), *Systems Modelling: theory and practice*: 146-163. Chichester: Wiley.
- Eden, C., Ackermann, F., & Cropper, S. 1992. The Analysis of Cause Maps. *The Journal of Management Studies*, 29(3): 309-324.
- Eden, C., & Huxham, C. 1996. Action Research for Management Research. *British Journal of Management*, 7(1): 75.
- Eden, C., & Huxham, C. 1999. Action Research for the Study of Organizations. In S. Clegg, & C. Hardy (Eds.), *Studying Organization: theory and method*: 272-288. London: Sage.
- Eden, C., & Huxham, C. 2001. The Negotiation of Purpose in Multi-organizational Collaborative Groups. *The Journal of Management Studies*, 38(3): 373-391.
- Eden, C., Jones, S., & Sims, D. 1983. *Messing about in problems: an informal structured approach to their identification and management*. Oxford: Pergamon.
- Eden, C., Jones, S., Sims, D., & Smithin, T. 1981. The Intersubjectivity of Issues and Issues of Intersubjectivity. *The Journal of Management Studies*, 18(1): 37-47.
- Eden, C., & Radford, K. J. 1990. *Tackling strategic problems: the role of group decision support*. London: Sage.
- Egan, J. 1998. *Re-Thinking Construction: report of the Construction Industry Task Force*. London: DETR.
- Elden, M. 1981. Sharing the Research Work: participative research and its role demands. In P. Reason, & J. Rowan (Eds.), *Human Inquiry: a sourcebook of new paradigm research*. Chichester: Wiley.
- Elden, M., & Chisholm, R. F. 1993. Emerging Varieties of Action Research: introduction to the Special Issue. *Human Relations*, 46(2): 121-141.
- Emerson, R. 1962. Power Dependence Relations. *American Sociological Review*, 27: 31-41.
- Emery, F., & Trist, E. 1972. *Towards a Social Ecology*. New York: Plenum.
- Epstein, S. 1979. The Ecological Study of Emotions in Humans. In P. Pliner, K. Blankenstein, & I. Spigel (Eds.), *Advances in the Study of Communications and Affect Vol 5: perceptions of emotions in self and others*: 47-83. New York: Plenum Press.
- Epstein, S. 1983. The Unconscious, the Preconscious and the Self-Concept. In J. Suls, & A. Greenwald (Eds.), *Psychological Perspectives on the Self*:

- the role of the unconscious in an individual's self system Vol 2*: 219-247. Hillsdale, NJ: Lawrence Earlbaum and Associates.
- Espejo, R., & Harden, R. 1989. *The Viable Systems Model: interpretations and applications of Stafford Beer's VSM*. Chichester: Wiley.
- Etzioni, A. 1968. *The Active Society: a theory of societal and political processes*. London: Collier-McMillan.
- Faludi, A. (Ed.). 1973. *A Reader in Planning Theory*. Oxford: Butterworth-Heinemann.
- Fielden, D., & Jacques, J. K. 1998. Systemic Approach to Energy Rationalisation in Island Communities. *International Journal of Energy Research*, 22(2): 107-129.
- Fine, M. 1991. New Voices in the Workplace: research directions in multicultural communication. *The Journal of Business Communication*, 28: 259-275.
- Finlay, P. 1998. On Evaluating the Performance of GSS: furthering the debate. *European Journal of Operational Research*, 107(1): 193-201.
- Flood, R. L., & Jackson, M. 1991. *Creative Problem Solving: Total Systems Intervention*. Chichester: Wiley.
- Flood, R. L., & Jackson, M. C. (Eds.). 1991. *Critical Systems Thinking: directed readings*. Chichester: Wiley.
- Ford, J. D., & Ford, L. W. 1995. The Role of Conversations in Producing Intentional Change in Organizations. *Academy of Management Review*, 20: 541-570.
- Ford, J. D., & Hegarty, W. H. 1984. Decision Makers' Beliefs About the Causes and Effects of Structure: An Exploratory Study. *Academy of Management Journal*, 27(2): 271-191.
- Forester, J. 1989. *Planning in the Face of Power*. Berkeley, CA: University of California Press.
- Foster, M. 1972. An Introduction to the Theory and Practice of Action Research in Work Organizations. *Human Relations*, 25(6): 529-556.
- Foucault, M. 1977. *Discipline and Punish: the birth of the prison*. Harmondsworth: Penguin.
- Foucault, M. 1980. Power/knowledge: selected readings and other writings 1972-1977. In C. Gordon (Ed.). Brighton: Harvester Press.
- Foucault, M. 1982. The Subject and Power. In H. Dreyfus, & P. Rabinow (Eds.), *Michel Foucault: beyond structuralism and hermeneutics*: 208-226. Brighton: Harvester Press.
- Foucault, M. 1984. *The History of Sexuality: an introduction*. Harmondsworth: Penguin.
- Fox, A. 1974. *Beyond Contract: work, power and trust relations*. London: Faber and Faber.
- Franco, L. A., Cushman, M., & Rosenhead, J. 2004. Project Review and Learning in the UK Construction Industry: Embedding a Problem Structuring Method within a partnership context. *European Journal of Operational Research*, 152(3): 586-601.
- Franks, J. 1974. Toward Understanding Understanding. In W. Weimer, & D. Palermo (Eds.), *Cognition and Symbolic Processes Vol.2*: 231-261. Hillsdale, NJ.: Erlbaum and Associates.

- Freire, P. 1992. *Pedagogy of the Oppressed*. New York: Continuum.
- French, J., & Raven, B. 1968. The Bases of Social Power. In D. Cartwright, & A. Zander (Eds.), *Group Dynamics*. New York: Harper and Row.
- Friedmann, J. 1992. *Empowerment: the politics of alternative development*. Oxford: Blackwell Publishers.
- Friend, J. 1990. Handling Organizational Complexity in Group Decision Support. In C. Eden, & J. Radford (Eds.), *Tackling Strategic Problems: the role of group decision support*: 18-28. London: Sage.
- Friend, J. 1992. New Directions in Software for Strategic Choice. *European Journal of Operational Research*, 61(1/2).
- Friend, J. 1993. Searching for Appropriate Theory and Practice in Multi-organizational Fields. *Journal of the Operational Research Society*, 44(6): 585-598.
- Friend, J. 1997. Connective Planning: from practice to theory and back. In E. Trist, F. Emery, & H. Emery (Eds.), *The Social Engagement of Social Science Volume 3: the ecological perspective*. Philadelphia: University of Pennsylvania Press.
- Friend, J. 2001. The Strategic Choice Approach. In J. Rosenhead, & J. Mingers (Eds.), *Rational Analysis for a Problematic World Revisited: problem structuring methods for complexity, uncertainty and conflict*: 115-149. Chichester: Wiley.
- Friend, J., & Hickling, A. 1987. *Planning Under Pressure: the strategic choice approach*. Oxford: Pergamon.
- Friend, J., & Hickling, A. 1997. *Planning Under Pressure: the strategic choice approach* (2nd ed.). Oxford: Butterworth- Heinemann.
- Friend, J., & Hickling, A. 2005. *Planning Under Pressure: the Strategic Choice Approach* (3rd ed.): Elsevier.
- Friend, J. K., & Jessop, W. N. 1969. *Local government and strategic choice: an operational research approach to the processes of public planning*. London: Tavistock Publications.
- Friend, J. K., Power, J. M., & Yewlett, C. J. L. 1974. *Public planning: the inter-corporate dimension*. London: Tavistock Publications.
- Frost, P. 1987. Power, Politics and Influence. In F. Tablin, L. Putnam, K. Roberts, & L. Porter (Eds.), *Handbook of Organizational Communications: an interdisciplinary perspective*: 229-295. London: Sage.
- Frost, P., & Egri, C. 1989. The Political Process of Innovation. In L. Cummings, & B. Staw (Eds.), *Research in Organizational Behaviour*: 229-295. Greenwich, CT.: JAI Press.
- Galbraith, J. 1986. Power and Organization. In S. Lukes (Ed.), *Power*: 211-228. Oxford: Blackwell Publishers.
- Gambetta, D. 1988. *Trust: making and breaking cooperative relations*. New York: Blackwell.
- Gaskell, G. 2000. Individual and Group Interviewing. In M. Bauer, & G. Gaskell (Eds.), *Qualitative Researching with Text, Image and Sound*. London: Sage.
- Gaventa, J. 1980. *Power and Powerlessness*. London: Oxford University Press.

- Gill, J., & Johnson, P. 1997. *Research Methods for Managers*. London: Paul Chapman Publishing.
- Glaser, B., & Strauss, A. 1964. The Social Loss of Dying Patients. *American Journal of Nursing*, 64: 119-122.
- Glaser, B., & Strauss, A. 1965. Temporal Aspects of Dying as a Non-scheduled Status Passage. *American Journal of Sociology*, 71(1): 48-59.
- Glaser, B., & Strauss, A. 1967. *The Discovery of Grounded Theory*. Chicago: Aldine.
- Glaser, B. G. 1993. *Basics of Grounded Theory*. Mill Valley, CA: Sociology Press.
- Goetz, J. P., & LeCompte, M. D. 1984. *Ethnography and Qualitative Design in Educational Research*. New York: Academic Press.
- Gough, J. D., & Ward, J. C. 1996. Environmental Decision Making and Lake Management. *Journal of Environmental Management*, 48(1): 1-15.
- Gray, B. 1985. Conditions Facilitating Interorganizational Collaboration. *Human Relations*, 38(10): 911-936.
- Gray, B. 1989. *Collaborating: finding common ground for multiparty problems*. San Francisco: Jossey-Bass.
- Gray, B. 1996. Cross-sectoral Partners: collaborative alliances among business, government and communities. In C. Huxham (Ed.), *Collaborative Advantage*: 57-79. London: Sage.
- Gray, B. 2000. Assessing Inter-Organizational Collaboration: multiple conceptions and multiple methods. In D. Faulkner, & M. De Rond (Eds.), *Cooperative Strategy: economic, business and organizational issues*: 243-260. Oxford: Oxford University Press.
- Gray, B., Bougon, M., & Donnellon, A. 1985. Organizations as Constructions and Destructors of Meaning. *Journal of Management*, 11(2): 83-98.
- Gray, B., & Hay, T. M. 1986. Political Limits to Interorganizational Consensus and Change. *The Journal of Applied Behavioral Science*, 22(2): 95.
- Greenberger, M., Crenson, M., & Crissey, B. 1976. *Models in the Policy Process*. New York: Russell Sage.
- Greenwood, D. J., & Levin, M. 1998. *Introduction to Action Research*. Thousand Oaks, CA: Sage.
- Greenwood, D. J., & Levin, M. 1998. *Introduction to Action Research*. Thousand Oaks, CA: Sage.
- Gricar, B. G., & Brown, L. D. 1981. Conflict, Power, and Organization in a Changing Community. *Human Relations*, 34(10): 877.
- Gummesson, E. 1991. *Qualitative Methods in Management Research*. London: Sage.
- Habermas, J. 1970. Towards a Theory of Communicative Competence. *Inquiry*, 13(4): 360-375.
- Habermas, J. 1971. *Knowledge and Human Interests* (J. Shapiro, Trans.). Boston, MA.: Beacon Press.
- Habermas, J. 1979. *Communication and the Evolution of Society*. Boston, MA: Beacon Press.
- Habermas, J. 1984. *The Theory of Communicative Action, Vol. I*. Boston, MA: Beacon Press.



- Hamel, G. 1991. Competition for Competence and Interorganizational Learning. *Strategic Management Journal*, 12: 83-103.
- Hannah, L. 1983. *The Rise of the Corporate Economy*. London: Methuen.
- Hardin, R. 1982. *Collective Action*. Baltimore, MD: John Hopkins University press.
- Hardy, C. 1985. The Nature of Unobtrusive Power. *Journal of Management Studies*, 22(4): 384-399.
- Hardy, C. 1994a. Interorganizational domains: the case of refugee systems. *Journal of Applied Behavioral Science*, 30(3): 278-296.
- Hardy, C. 1994b. Power and Politics in Organizations. In C. Hardy (Ed.), *Managing Strategic Action: mobilizing change*: 220-237. London: Sage.
- Hardy, C. 1996. Understanding Power: bringing about strategic change. *British Journal of Management*, 7(1): S3-S16.
- Hardy, C., Lawrence, T., & Grant, D. 2005. Discourse and Collaboration: the role of conversations and collective identity. *Academy of Management Review*, 30(1): 58-77.
- Hardy, C., & Leiba-O'Sullivan, S. 1998. The Power Behind Empowerment: implications for research and practice. *Human Relations*, 51(4): 451-483.
- Hardy, C., & Phillips, N. 1998. Strategies of Engagement: lessons from the critical examination of collaboration and conflict in an interorganizational domain. *Organization Science*, 9(2): 217-230.
- Hardy, C., Phillips, N., & Lawrence, T. 1998. Distinguishing Trust and Power in Interorganizational Relations: forms and facades of trust. In C. Lane, & R. Bachmann (Eds.), *Trust Within and Between Organizations: conceptual issues and empirical applications*: 65-87. Oxford: Oxford University Press.
- Harrigan, K. 1988. Joint Ventures and Competitive Strategy. *Strategic Management Journal*, 9(2): 141-158.
- Harris, L., & Cronen, V. 1979. A Rules-based Model for the Analysis and Evaluation of Communication. *Communication Quarterly*, 25: 30-41.
- Healey, P. 1997. *Collaborative Planning: shaping places in fragmented societies*. Basingstoke: Palgrave MacMillan.
- Heimer, C. 1985. Allocating Information Costs in a Negotiated Information Order: Interorganizational Constraints on Decision Making in Norwegian Oil Insurance. *Administrative Science Quarterly*, 30(3): 395-417.
- Hickling, A. 1990. 'Decision Spaces': a scenario about designing appropriate rooms for group decision management. In C. Eden, & J. Radford (Eds.), *Tackling Strategic Problems: the role of group decision support*: 169-177. London: Sage.
- Hickson, D., Hinings, C., Lee, C., Schneck, R., & Pennings, J. 1971. A Strategic Contingencies Theory of Intraorganizational Power. *Administrative Science Quarterly*, 16: 216-229.
- Himmelman, A. 1996. On the Theory and Practice of Transformational Collaboration: from social service to social justice. In C. Huxham (Ed.), *Creating Collaborative Advantage*: 19-43. London: Sage.

- Hindle, T., Checkland, P., Mumford, M., & al, e. 1995. Developing a Methodology for Multidisciplinary Action Research: a case study. *Journal of Operational Research Society*, 46(4): 453-464.
- Holmqvist, M. 2003. A Dynamic Model of Intra- and Interorganizational Learning. *Organization Studies*, 24(1): 95-123.
- Hosking, D.-M., & Morely, L. E. 1991. *A Social Psychology of Organizing*. London: Harvester Wheatsheaf.
- Howard, N. 1977. *Paradoxes of Rationality: games, metagames and political behaviour*. Cambridge, MA: MIT Press.
- Howard, N. 1987. The Present and Future of Metagame Analysis. *European Journal of Operational Research*, 32(1): 1-25.
- Howard, N. 1999. *Confrontation Analysis: how to win operations other than war*. Washington, DC: CCRP.
- Howard, N., Bennett, P., Bryant, J., & Bradley, M. 1993. Manifesto for a Theory of drama and Irrational Choice. *Journal of Operational Research Society*, 44(1): 99-103.
- Huber, G. 1984. Issues in the Design of Group Decision Support Systems. *MIS Quarterly*, 8(3): 195-204.
- Huff, A., & Jenkins, M. 2002. *Mapping Strategic Knowledge*. London: Sage.
- Hult, M., & Lennung, S. 1980. Towards a Definition of Action Research: a note and bibliography. *Journal of Management Studies*, 17(2): 242-250.
- Huspek, M., & Kendall, K. 1991. On Withholding Political Voice: an analysis of the political vocabulary of a 'non-political' speech community. *Quarterly Journal of Speech*, 77: 1-19.
- Huxham, C. 1990. On Trivialities in Process. In C. Eden, & J. Radford (Eds.), *Tackling Strategic Problems: the role of group decision support*: 162-168. London: Sage.
- Huxham, C. 1991. Facilitating Collaboration: issues in multi-organizational group decision support in voluntary, informal collaborative settings. *The Journal of the Operational Research Society*, 42(12): 1037-1045.
- Huxham, C. 1996. *Creating Collaborative Advantage*. London: Sage.
- Huxham, C. 1996. Group Decision Support for Collaboration. In C. Huxham (Ed.), *Creating Collaborative Advantage*: XX-XX. London: Sage.
- Hyman, R., & Brough, I. 1975. *Social Values and Industrial Relations*. Oxford: Basil Blackwell.
- Jackson, M. 1982. The Nature of Soft Systems Thinking: the work of Churchman, Ackoff and Checkland. *Journal of Applied Systems Analysis*, 9(17-28).
- Jackson, M. 1987. New Directions in Management Science. In M. Jackson, & P. Keys (Eds.), *New Directions in Management Science*: 133-164. Aldershot: Gower.
- Jackson, M. 1987. Present Positions and Future Prospects in Management Science. *OMEGA*, 15(6): 455-466.
- Jackson, M. 1988. Some Methodologies for Community Operational Research. *Journal of Operational Research Society*, 39(8): 715-724.
- Jackson, M. 1988. Systems Methods for Organisational Analysis and Design. *Systems Research*, 5: 201-210.
- Jackson, M. 2000. *Systems Approaches to Management*. New York: Kluwer.

- Jackson, M. 2001. Critical Systems Thinking and Practice. *European Journal of Operational Research*, 128: 233-244.
- Jackson, M. C., & Keys, P. 1984. Towards a System of Systems Methodologies. *Journal of the Operational Research Society*, 35(6): 473-486.
- Jones, S. 1985. Depth Interviews. In R. Walker (Ed.), *Applied Qualitative Research*. Aldershot: Gower.
- Kaplan, A. 1964. *The Conduct of Inquiry*. Scranton, PA: Chandler.
- Keller, P. 1981. Interpersonal Dissent and the Ethics of Dialogue. *Communication*, 6: 287-303.
- Kelly, G. 1955. *The Psychology of Personal Constructs*. New York: Norton.
- Keys, P. 1984. Traditional Management Science and the Emergent Critique. In M. Jackson, & P. Keys (Eds.), *New Directions in Management Science*: 1-25. Aldershot: Gower.
- Khisty, C. J. 1995. Soft Systems Methodology as Learning and Management Tool. *Journal of Urban Planning and Development*, 121(3): 91-107.
- Kirby, M. W. 2000. Operations Research Trajectories: the Anglo-American experience from the 1940s to the 1990s. *Operations Research*, 48(5): 661-670.
- Kirby, M. W. 2000. Spreading the Gospel of Management Science: operational research in Iron and Steel, 1950–1970. *Journal of Operational Research Society*, 51(9): 1020-1028.
- Kirby, M. W., & Capey, R. 1997. The Air Defence of Great Britain, 1920–1940: an operational research perspective. *Journal of Operational Research Society*, 48(6): 555-568.
- Kirby, M. W., & Capey, R. 1997. The Area Bombing of Germany in World War II: an operational research perspective. *Journal of Operational Research Society*, 48(7): 661-677.
- Kirby, M. W., & Capey, R. 1998. The Origins and Difusion of Operational Research in the UK. *Journal of Operational Research Society*, 49(4): 307-326.
- Knights, D., & Morgan, G. 1991. Strategic Discourse and Subjectivity: towards a critical analysis of corporate strategy in organizations. *Organization Studies*, 12(2): 251-273.
- Knights, D., & Willmott, H. 1989. Power and Subjectivity at Work: from degradation to subjugation in social relations. *Sociology*, 23(4): 535-558.
- Kuhn, T. S. 1962. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
- Kumar, R., & Nti, K. 1998. Differential Learning and Interaction in Alliance Dynamics: a process and outcome discrepancy model. *Organization Science*, 9(3): 356-367.
- Lane, D. 2000. Should System Dynamics be described as a 'Hard' or 'Deterministic' Systems Approach? *Systems Research and Behavioural Science*, 17(1): 3-22.
- Lane, P., & Lubatkin, M. 1998. Relative Absorptive Capacity and Interorganizational Learning. *Strategic Management Journal*, 19: 461-477.
- Langfield-Smith, K. 1992. Exploring the Need for a Shared Cognitive Map. *Journal of Management Studies*, 29(3): 349-368.

- Lartindrake, J. M., & Curran, C. R. 1996. All Together Now: the circular organization in a university hospital. *Systems Practice*, 9(5): 391-401.
- Latham, M. 1994. *Constructing the Team: final report of the government/industry review of procurement and contractual arrangements in the UK construction industry*. London: HMSO.
- Ledington, P., & Donaldson, J. 1997. Soft OR and Management Practice: a study of the adoption and use of Soft Systems Methodology. *Journal of Operational Research Society*, 48(3): 229-240.
- Lewin, K. 1946. Action Research and Minority Problems. *Journal of Social Issues*, 2: 34-46.
- Lewin, K. 1947. Frontiers in Group Dynamics II: channels of group life; social planning and action research. *Human Relations*, 1: 143-153.
- Lewis, J., & Weigert, A. 1985. Trust as a Social Reality. *Social Forces*, 43(4): 967-985.
- Lindblom, C. E. 1979. Still Muddling, Not Yet Through. *Public Administration Review*, 39(6): 517-526.
- Logsdon, J. 1991. Interests and Interdependence in the Formation of Social Problem Solving Collaborations. *Journal of Applied Behavioral Science*, 27(1): 23-37.
- Louis, M. R. 1980. Surprise and Sense Making: What Newcomers Experience in Entering Unfamiliar Organizational Settings., *Administrative Science Quarterly*, Vol. 25: 226: Administrative Science Quarterly.
- Luckman, J. 1967. An Approach to the Management of Design. *Operational Research Quarterly*, 18(4): 345-358.
- Luhmann, N. 1979. *Trust and Power*. Chichester: Wiley.
- Lukes, S. 1974. *Power: a radical view*. London: Macmillan.
- Lukes, S. 1986. *Power*. Oxford: Blackwell Publishers.
- Markoczy, L., & Goldberg, J. 1995. A method for eliciting and comparing causal maps., *Journal of Management*, Vol. 21: 305: Elsevier Science Publishing Company, Inc.
- Martin, R. 1977. *The Sociology of Power*. London: Routledge and Kegan Paul.
- Mason, J., & Mitroff, I. 1981. *Challenging Strategic Planning Assumptions: theory, cases and techniques*. New York: Wiley.
- Mayo, M., & Taylor, M. 2001. Partnerships and Power in Community Regeneration. In S. Balloch, & M. Taylor (Eds.), *Partnership Working*: 29-56. Bristol: Policy Press.
- McCann, J. E. 1983. Design Guidelines for Social Problem-Solving Interventions. *The Journal of Applied Behavioral Science*, 19(2): 177-189.
- McCartt, A., & Rohrbaugh, J. 1989. Evaluating Group Decision Support System Effectiveness: a performance study of decision conferencing. *Decision Support Systems*, 5: 243-253.
- McCartt, A., & Rohrbaugh, J. 1995. Managerial Openness to Change and the Introduction of GDSS: explaining initial success and failure in Decision Conferencing. *Organization Science*, 6(5): 569-584.
- McGrath, J. E. 1982. Dilemmatics: the study of research choices and dilemmas. In J. E. McGrath, J. Martin, & R. A. Kulka (Eds.), *Judgement Calls in Research*: 69-102. Beverly Hills, CA: Sage.

- McGrath, J. E., & Hollingshead, A. B. 1994. *Groups Interacting with Technology: ideas, evidence, issues and an agenda*. Thousand Oaks, CA: Sage.
- McGuire, J. 1988. A Dialectical Analysis of Interorganizational Networks. *Journal of Management*, 14(1): 109-124.
- Mead, G. 1964. *Mind, Self and Society*. Chicago: University of Chicago Press.
- Merleau-Ponty, M. 1962. *Phenomenology of Perception* (C. Smith, Trans.). New York: Humanities Press.
- Miall, D. 1982. *Metaphor: problems and perspectives*. Sussex: Harvester Press.
- Miles, M. B., & Huberman, A. M. 1994. *Qualitative Data Analysis: an expanded sourcebook*. Thousands Oaks, CA: Sage.
- Milward, H. 1982. Interorganizational Policy Systems and Research in Public Organizations. *Administration and Society*, 13(4): 457-478.
- Miner, A., & Andersson, P. 1999. Industry and Population-level Learning: organisational, interorganisational, and collective learning. In A. Miner, & P. Andersson (Eds.), *Advances in Strategic Management*: 1-30. Greenwich, CT: JAI Press.
- Mingers, J. 1992. Recent Developments in Critical Management Science. *The Journal of the Operational Research Society*, 43(1): 1-10.
- Mingers, J. 1997. Towards Critical Pluralism. In J. Mingers, & A. Gill (Eds.), *Multimethodology: the theory and practice of combining managements science methodologies*: 407-440. Chichester: Wiley.
- Mingers, J. 2000. Variety is the Spice of Life: combining soft and hard OR/MS methods. *International Transactions in Operational Research*, 7(6): 673-691.
- Mingers, J., & Brocklesby, J. 1997. Multimethodology: towards a framework for mixing methodologies. *OMEGA*, 25(5): 489-509.
- Mingers, J., & Gill, A. (Eds.). 1997. *Multimethodology: the theory and practice of combining Management Science methodologies*. Chichester: Wiley.
- Mingers, J., & Rosenhead, J. 2004. Problem Structuring Methods in Action. *European Journal of Operational Research*, 152(3): 530-554.
- Mingers, J., & Taylor, S. 1992. The Use of Soft Systems Methodology in Practice. *Journal of Operational Research Society*, 43(4): 321-332.
- Morton, A., Ackermann, F., & Belton, V. 2003. Technology-driven and Model-driven Approaches to Group Decision Support: focus, research philosophy and key concepts. *European Journal of Information Systems*, 12(2): 110-126.
- Mueller, C. 1973. *The Politics of Communication*. London: Oxford University Press.
- Muhr, T. 1997. *Atlas.ti: short user's manual*. Berlin: Scientific Software Development.
- Munro, I., & Mingers, J. 2002. The Use of Multimethodology in Practice: results from a survey of practitioners. *Journal of Operational Research Society*, 53(4): 369-378.
- Nathan, M., & Mitroff, I. 1991. The Use of Negotiated Order Theory as a Tool for the Analysis and Development of an Interorganizational Field. *Journal of Applied Behavioral Science*, 27(2): 163-180.

- Nicolini, D. 1999. Comparing methods for mapping organizational cognition., *Organization Studies (Walter de Gruyter GmbH & Co. KG.)*, Vol. 20: 833: Walter de Gruyter GmbH & Co. KG.
- O'Toole, R., & O'Toole, A. 1981. Negotiating Interorganizational Orders. *The Sociological Quarterly*, 22(1): 29-41.
- Oliver, C. 1990. Determinant of Interorganizational Relationships: integration and future directions. *Academy of Management Review*, 15(2): 241-265.
- Olson, M. 1971. *The Logic of Collective Action*. Cambridge, MA: Harvard University Press.
- Ormerod, R. 1995. Putting Soft OR Methods to Work: Information Systems Strategy Development at Sainsbury's. *Journal of Operational Research Society*, 46(3): 277-293.
- Ormerod, R. 1996. Putting Soft OR Methods to Work: Information Systems Development at Richards Bay. *Journal of Operational Research Society*, 47(9): 1083-1097.
- Ormerod, R. 1998. Putting Soft OR Methods to Work: Information Systems Strategy Development at Parabola. *OMEGA*, 26(1): 75-98.
- Osborne, R., & Hagedoorn, J. 1997. The Institutionalization and Evolutionary Dynamics of Interorganizational Alliances and Networks. *Academy of Management Journal*, 40(2): 261-278.
- Parsons, S., & McBurney, P. 2003. Argumentation-based Dialogues for Agent Co-ordination. *Group Decision and Negotiation*, 12(5): 415-439.
- Payne, S. 1991. A Proposal for Corporate Ethical Reform: the ethical dialogue group. *Business and Professional Ethics Journal*, 10: 67-88.
- Pervan, G. P., & Atkinson, D. J. 1995. GDSS Research: and overview and historical analysis. *Group Decision and Negotiation*, 4: 475-483.
- Peters, T. 1978. Symbols, Patterns and Settings. *Organizational Dynamics*, 2: 2-23.
- Pettigrew, A. 1973. *The Politics of Organizational Decision Making*. London: Tavistock Press.
- Pettigrew, A. 1977. Strategy Formulation as a Political Process. *International Studies of Management and Organization*, 7: 78-87.
- Pettigrew, A. 1979. On Studying Organizational Cultures. *Administrative Science Quarterly*, 24(4): 570-581.
- Pfeffer, J. 1981. Management as Symbolic Action. In L. Cummings, & B. Staw (Eds.), *Research in Organizational Behavior 3*: 1-52. Greenwich, CT.: JAI Press.
- Pfeffer, J. 1981. *Power in Organizations*. Marshfield, MA: Pitman.
- Pfeffer, J., & Salancik, G. 1974. Organizational Decision Making as a Political Process. *Administrative Science Quarterly*, 19: 135-151.
- Pfeffer, J., & Salancik, G. 1978. *The External Control of Organizations*. New York: Harper and Row.
- Phillips, D. C. 1992. *The Social Scientist's Bestiary: a guide to fabled threats to, and defences of, naturalistic social science*. Oxford: Pergamon Press.
- Phillips, L. 1984. A Theory of Requisite Decision Models. *Acta Psychologica*, 56(1-3): 29-48.

- Phillips, L. 1989. People-centred Group Decision Support. In G. Doukidis, F. Land, & G. Miller (Eds.), *Knowledge-based Management Support Systems*: 208-224. Chichester: Ellis-Horwood.
- Phillips, L., & Phillips, M. 1993. Facilitated Work Groups: Theory and Practice. *Journal of Operational Research Society*, 44(6): 533-549.
- Pinsonneault, A., & Kraemer, K. L. 1989. The Impact of Technological Support on Group Processes and Outcomes: an assessment of the empirical research. *European Journal of Operational Research*, 46(2): 143-161.
- Polanyi, M. 1958. *The Study of Man*. Chicago: University of Chicago Press.
- Polanyi, M. 1967. *The Tacit Dimension*. London: Routledge and Kegan Paul.
- Polsby, N. 1963. *Community Power and Political Theory*. New Haven: Yale University Press.
- Popper, K. 1968. *The Logic of Scientific Discovery*. New York: Harper & Row.
- Porter, T. 1992. Objectivity as Standardization: the rhetoric of impersonality in measurement, statistics and cost-benefit analysis. *Annals of Scholarship*, 9: 19-59.
- Preece, R. 1994. *Starting Research: an introduction to academic research and dissertation writing*. London: Pinter Publishers.
- Psathas, G. 1995. *Conversation Analysis: the study of talk in interaction*. London: Sage.
- Quade, E. 1980. Pitfalls in Formulation and Modelling. In G. Majone, & E. Quade (Eds.), *Pitfalls in Analysis*. Chichester: Wiley.
- Quinn, R., & Rohrbaugh, J. 1981. A Competing Values Approach to Organizational Effectiveness. *Public Productivity Review*, 5: 122-140.
- Quinn, R., & Rohrbaugh, J. 1983. A Spatial Model of Effectiveness Criteria: towards a competing values approach to organizational analysis. *Management Science*, 29(3): 363-377.
- Radnor, M., & Neal, R. D. 1973. The Progress of Management Science Activities in Large US Corporations. *Operations Research*, 21: 427-450.
- Rapoport, R. N. 1970. Three Dilemmas in Action Research. *Human Relations*, 23(6): 499-513.
- Reagan, P., & Rohrbaugh, J. 1990. Group Decision Process Effectiveness: a competing values approach. *Group and Organization Studies*, 15(1): 20-43.
- Revans, R. 1972. *Hospitals: communication, choice and change*. London: Tavistock.
- Revans, R. 1978. Action Learning and the Nature of Knowledge/Learning. *Education and Training*, 20: 8-11.
- Revans, R. 1982. *The Origins and Growth of Action Learning*. Bickley, Kent: Chartwell-Bratt.
- Ring, P. S., & Van de Ven, A. H. 1994. Developmental Processes of Cooperative Interorganizational Relations. *Academy of Management Review*, 19(1): 90-118.
- Rittel, H., & Webber, M. 1973. Dilemmas in a General Theory of Planning. *Policy Science*, 4: 155-169.
- Robson, C. 1993. *Real World Research: a resource for social scientists and practitioner-researchers*. Oxford: Blackwell.

- Rohrbaugh, J. 1987. Assessing the Effectiveness of Expert Teams. In J. e. a. Mumpower (Ed.), *NATO ASI Series Vol. F35*: 251-267.
- Rosch, E. 1973. Natural Categories. *Cognitive Psychology*, 4: 328-350.
- Rosch, E., & Mervis, C. 1975. Family Resemblances: studies in the internal structure of categories. *Cognitive Psychology*, 7: 573-605.
- Rosch, E., Mervis, C., Gray, W., Johnson, M., & Boyers-Braem, P. 1976. Basic Objects in Natural Categories. *Cognitive Psychology*, 8: 382-439.
- Rosenhead, J. 1980. Planning under uncertainty 1: the inflexibility of methodologies. *Journal of Operational Research Society*, 31(3): 209-216.
- Rosenhead, J. 1980. Planning under uncertainty 2: a methodology for robustness analysis. *Journal of Operational Research Society*, 31(4): 331-341.
- Rosenhead, J. 1986. Custom and Practice. *Journal of Operational Research Society*, 37(4): 335-343.
- Rosenhead, J. (Ed.). 1989. *Rational Analysis for a Problematic World: problem structuring methods for complexity, uncertainty and conflict*. Chichester: Wiley.
- Rosenhead, J. 1992. Into the Swamp: the analysis of social issues. *The Journal of the Operational Research Society*, 43(4): 293-305.
- Rosenhead, J. 1994. One Sided Practice: can we do better? In W. A. Wallace (Ed.), *Ethics in Modeling*: 195-206. Oxford: Pergamon.
- Rosenhead, J. 1996. What's the Problem? An Introduction to Problem Structuring Methods. *Interfaces*, 29(6): 117-131.
- Rosenhead, J. 2001. Robustness Analysis: keeping your options open. In J. Rosenhead, & J. Mingers (Eds.), *Rational Analysis for a Problematic World Revisited: problem structuring methods for complexity, uncertainty and conflict*: 181-207. Chichester: Wiley.
- Rosenhead, J., & Mingers, J. (Eds.). 2001. *Rational Analysis for a Problematic World Revisited: problem structuring methods for complexity, uncertainty and conflict*. Chichester: Wiley.
- Rosenhead, J., & Thunhurst, C. 1982. A Materialistic Analysis of Operational Research. *Journal of Operational Research Society*, 33(2): 111-122.
- Rosenstone, S., & Hansen, J. 1993. *Mobilization, Participation and Democracy in America*. Needham Heights: Allyn and Bacon.
- Salaman, G. 1979. *Work Organisation: resistance and control*. London: Longman.
- Salaman, G. 1980. The Sociology of Work: some themes and issues. In G. Esland, & G. Salaman (Eds.), *The Politics of Work and Occupation*. Milton Keynes: Open University.
- Salancik, G., & Pfeffer, J. 1974. The Bases and Uses of Power in Organizational Decision Making. *Administrative Science Quarterly*, 19: 453-473.
- Saunders, P. 1980. *Urban Politics: a social interpretation*. Harmondsworth: Penguin.
- Saxton, T. 1997. The Effects of Partner and Relationship Characteristics on Alliance Outcomes. *Academy of Management Journal*, 40(2): 443-461.
- Schattschneider, E. 1960. *The Semi-sovereign People*. New York: Holt, Rinehart and Winston.



- Schoemaker, P. 1995. Scenario Planning: a tool for strategic thinking. *Sloan Management Review*, 36(2): 25-40.
- Schon, D. A. 1987. *Educating the Reflective Practitioner: toward a new design for teaching and learning in the professions*. San Francisco: Jossey-Bass.
- Schopler, J. 1987. Interorganizational Groups: origins, structure and outcomes. *Academy of Management Review*, 12(4): 702-713.
- Schutz, A. 1967. *The Phenomenology of the Social World* (G. Walsh, & F. Lehnert, Trans.). Evanston, IL: Northwestern University Press.
- Silverman, D. 1970. *The Theory of Organizations*. London: Heinemann.
- Smircich, L. 1983. Organizations as Shared Meanings. In L. Pondy, P. Frost, G. Morgan, & T. Dandridge (Eds.), *Organizational Symbolism*: 55-65. Greenwich, CT: JAI Press.
- Smircich, L., & Morgan, G. 1982. Leadership: the management of meaning. *Journal of Applied Behavioral Science*, 18(3): 257-273.
- Stevens, C. A., & Finlay, P. 1996. A Research Framework for Group Support Systems. *Group Decision and Negotiation*, 5: 521-543.
- Stewart, J. 1978. Foundations of Dialogic Communication. *Quarterly Journal of Speech*, 64: 183-201.
- Stowell, F. 1995. *Information Systems Provision: the contribution of Soft Systems Methodology*. New York: McGraw Hill.
- Strauss, A. 1978. *Negotiations: varieties, contexts, processes and social order*. San Francisco: Jossey-Bass.
- Strauss, A., & Corbin, J. 1998. *Basics of Qualitative Research: techniques and procedures for developing grounded theory*. London: Sage.
- Strauss, A., Schatzman, L., Ehrlich, D., Bucher, R., & Sabshin, M. 1963. The Hospital and Its Negotiated Order. In E. Freidson (Ed.), *The Hospital in Modern Society*: 147-169. London: Collier-Macmillan.
- Strauss, A. L., & Corbin, J. 1990. *Basics of Qualitative Research*. London: Sage.
- Susman, G. 1983. Action Research. In G. Morgan (Ed.), *Beyond Method*: 95-113. Beverly Hills, CA: Sage.
- Susman, G. I., & Evered, R. D. 1978. An Assessment of the Scientific Merits of Action Research. *Administrative Science Quarterly*, 23: 582-603.
- Taket, A. 2002. Facilitation: some contributions to theorising the practice of operational research. *Journal of the Operational Research Society*, 53(2): 126-136.
- Taket, A., & White, L. 2000. *Partnership and Participation: decision-making in the multi-agency setting*. Chichester: Wiley.
- Ten Have, P. 1999. *Doing Conversation Analysis: a practical guide*. London: Sage.
- Thibaut, J., & Kelly, H. 1959. *The Social Psychology of Groups*. New York: Wiley.
- Torbet, W. R. 1981. Why Educational Research has been so Uneducational: the case for a new model of social science based on collaborative inquiry. In P. Reason, & J. Rowan (Eds.), *Human Inquiry: a sourcebook of new paradigm research*: 141-151. Chichester: Wiley.

- Torbet, W. R. 1991. *The Power of Balance: transforming self, society and scientific inquiry*. Newbury Park, CA: Sage.
- Trist, E. 1983. Referent Organizations and the Development of Interorganizational Domains. *Human Relations*, 36(3): 269-284.
- Turner, B. 1981. Some Practical Aspects of Qualitative Data Analysis: one way of organizing the cognitive processes associated with the generation of grounded theory. *Quality and Quantity*, 15: 225-247.
- Turner, B. 1983. The Use of Grounded Theory for the Qualitative Analysis of Organizational Behaviour. *Journal of Management Studies*, 20(3): 333-348.
- Turner, J., & Muller, R. 2003. On the Nature of the Project as a Temporary Organization. *International Journal of Project Management*, 21: 1-8.
- Ulengin, F., & Topcu, I. 1997. Cognitive Map: KBDSS, integration in transportation planning. *Journal of Operational Research Society*, 48(11): 1065-1075.
- Ulrich, W. 1983. *Critical Heuristics of Social Planning*. Bern: Haupt.
- Van der Heijden, K. 1996. *Scenarios: the art of strategic conversation*. Chichester: Wiley.
- Van Maanen, J. 1979. On the Understanding of Interpersonal Relations. In W. Bennis, J. Van Maanen, E. Schein, & F. Steele (Eds.), *Essays in Interpersonal Communication*: 13-42. Homewood, IL: Dorsey.
- Vansina, L., & Taillieu, T. 1997. Diversity in Collaborative Task-Systems. *European Journal of Work and Organizational Psychology*, 6(2): 183-199.
- Vaughan, E., & Siefert, M. 1992. Variability in the Framing of Risk Issues. *Journal of Social Issues*, 48(4): 119-135.
- Vennix, J. 1996. *Group Model Building: facilitating team learning using System Dynamics*. Chichester: Wiley.
- Vickers, G. 1965. *The Art of Judgement: a study of policy making*. London: Chapman and Hall.
- Wack, P. 1985. Scenarios: uncharted waters ahead. *Harvard Business Review*, 63(5): 73-89.
- Walton, D. N. 1989. *Informal Logic: a handbook for critical argumentation*. New York: Cambridge University Press.
- Walton, D. N. 1991. *Begging the Question: circular reasoning as a tactic of argumentation*. New York: Greenwood Press.
- Walton, D. N. 1992. *Plausible Argument in Everyday Conversation*. Albany, NY: State University of New York Press.
- Walton, D. N. 1998. *The New Dialectic: conversational contexts of argument*. Toronto: University of Toronto Press.
- Walton, E., & Dawson, S. 2001. Managers' Perceptions of Criteria of Organizational Effectiveness. *Journal of Management Studies*, 38(2): 173-199.
- Watson, S., & Buede, D. 1987. *Decision Synthesis: the principles and practice of Decision Analysis*. Cambridge: Cambridge University Press.
- Wax, H. 1971. *Doing Fieldwork: warnings and advice*. Chicago, ILL: University of Chicago Press.

- Webb, A. 1991. Co-ordination: a problem in public sector management. *Policy and Politics*, 19(4): 229-241.
- Weber, M. 1964. *The Theory of Social and Economic Organization* (A. Henderson, & T. Parsons, Trans.). New York: The Free Press.
- Weick, K. 1979. *The Social Psychology of Organizing*. New York: McGraw-Hill.
- Weick, K. 1995. *Sense Making in Organizations*. Thousand Oaks, CA: Sage.
- Weick, K., & Bougon, M. G. 1986. Organizations as Cognitive Maps. In H. P. Sims, & D. A. Gioia (Eds.), *The Thinking Organization*: 102-135. San Francisco, CA: Jossey-Bass.
- Wells, J. S. G. 1995. Discontent without Focus: an analysis of nurse management and activity on a psychiatric inpatient facility using a soft systems approach. *Journal of Advanced Nursing*, 21(2): 214-221.
- Westley, F., & Vredenburg, H. 1991. Strategic Bridging: the collaboration between environmentalists and business in the marketing of green products. *Journal of Applied Behavioral Science*, 27(1): 65-90.
- White, L. 1996. Development Options for a Rural Community in Belize: alternative development and operational research. *International Transactions in Operational Research*, 1(4): 453-462.
- Whyte, W. F. (Ed.). 1991. *Participatory Action Research*. Newbury Park, CA: Sage.
- Williams, P. 2002. The Competent Boundary Spanner. *Public Administration*, 80(1): 103-124.
- Williams, T., Ackermann, F., & Eden, C. 2003. Structuring a delay and disruption claim: An application of cause-mapping and system dynamics. *European Journal of Operational Research*, 148(1): 192.
- Willmott, H. 1989. OR as a Problem Situation: from soft systems methodology to critical science. In M. Jackson, P. Keys, & S. Cropper (Eds.), *Operational Research and the Social Sciences*: 65-78. New York: Plenum Press.
- Wong, H., & Rosenhead, J. 2000. A Rigorous Definition of Robustness Analysis. *Journal of Operational Research Society*, 51(2): 176-182.
- Wood, D., & Gray, B. 1991. Toward a Comprehensive Theory of Collaboration. *The Journal of Applied Behavioral Science*, 27(2): 139.
- Wrong, D. 1995. *Power: its form, bases and uses*. New Brunswick: Transaction Publishers.
- Zelditch, M. 1962. Some Methodological Problems of Field Studies. *American Journal of Sociology*, 67: 566-576.